

MINICAM



WORK ROOM ISSUE

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chrome Technique "

ting—from A to Z "

ee-Dimension Photography "

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d 'em With a Lens "

SEPT.

25¢

Miniature Camera Monthly—For EVERY CAMERA User



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Stop that!

YOU can "stop" night-time action as it could never be stopped before . . . thanks to *Agfa Ultra-Speed Pan* . . . the *fastest film for your 35 mm. miniature camera*.

Ultra-Speed Pan's truly astonishing speed permits the use of smaller lens openings than were formerly necessary for night shots. In addition,

this film offers full color sensitivity, wide latitude, excellent clarity and keeping qualities.

Get a supply of *Agfa Ultra-Speed Pan* for your next after-dark pictures, both indoor and out. You'll be delighted with the way its speed permits you to stop action, including moving autos, blinking signs, and twinkling lights. **Made by Agfa Ansco Corporation in Binghamton, New York. U. S. A.**

AGFA ULTRA-SPEED PANCHROMATIC **FILM**

Agfa

CONTENTS

Vol. 3 No. 1
SEPTEMBER, 1939

**MINICAM
MONTHLY**
WILL LANE, Editor

COVER

"Sea Venus"By Henry Clay Gipson

SECOND COVER

"Calling All Braves".....By Anton Baumann

ARTICLES

What is Photogenic?— By John Hutchins, A. R. P. S.....	13
New Angles for Your Subjects— By Arthur Brackman.....	20
Anton Baumann and His Kodachrome Technique—By Stanley Rayfield.....	24
The Camera Under Water—By Eliot Elisofon..	30
Modern Film for Your Camera— By Kenneth Houston.....	34
How to Equip Your Darkroom— By Jacob Deschin, A. R. P. S.	42
Ready Set Enlarging— By C. W. Gibbs, A. R. P. S.	46
Practical Print Developing—By E. W. Lowe...	48
Printing Screens—By Jack Powell.....	54
Land Them With a Lens—By Ray Ovington...	62
Three Dimension Photography— By W. C. Osterbrock.....	68

DEPARTMENTS

In Focus	4
Behind the News Camera.....	8
Superpan Panning	10
Being Critical	72
Salons to Enter	84
Salons to See	92
Photography Trade News.....	98
Build It Yourself	106
Kamera Kwiz	108

5-MINUTE FEATURES

Photo Fakes Exposed	18
\$\$\$ in Real Estate.....	45
Build a Fabricated Darkroom.....	66
Success Story of a Camera Club.....	74

CINECAM

How To Splice—By William L. Morgan.....109

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"Criticizing Advertisers"

Sirs:

Every technical magazine should champion the use of the metric system. I am prompted to this plea by Mr. Chase's letter ("In Focus," Aug. p 4.) criticizing advertisers who fail to give lens data in inches.

Imagine, for instance, a photographer wishing to use half quantities in a formula that called for 3 ounces 145 grains, could so much more easily work with the metric equivalent, 100 grams. How cumbersome it is to express a filter size as 1 11/16 inches, when the metric size—just as easily measurable—is 36 mm. (This is especially important in view of the fact that lenses are made to metric sizes, not inches.)

No scientist would think of encumbering his efficiency with odd quantities like quarts, inches, and ounces; why except photography from the realm of science?

PHILIP S. BERGMAN.

New Rochelle, N. Y.

MINICAM's advertisers have followed carefully letters from readers constructively criticizing photographic advertisements. They offer \$5 to the *MINICAM* reader who explains, in 300 words or less, which advertisement he likes best in this issue; and an additional \$5 for a letter explaining which advertisement he likes least. *MINICAM* will forward the two \$5 checks to the prize winning letter writers.—Ed.



PERFLEX Forty-Four

35mm. MINIATURE CAMERA

*The Ultimate choice
of the expert.*

Camera with built-in Synchronizer, less flash gun
WITH F3.5 LENS.....\$37.50
WITH F2.8 LENS.....47.50

EVEREADY CASE, EXTRA \$5.00

THE CAMERA THAT GIVES YOU:

- Coupled range finder for automatic focusing.
- Built-in flash synchronizer for flash light photography.
- Built-in exposure meter.
- Focal plane shutter with speeds from 1 to 1/1250th sec.
- Telescopic view finder.
- Interchangeable lenses.
- Uses 35mm. film, 36 exposures per load.
- Made in U. S. A.
- For pictures in color or black and white.

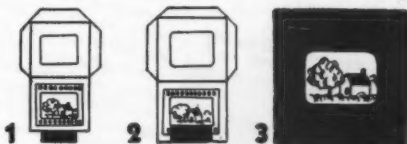
THE PERFEX FLASH GUN

This specially designed flash gun enables the Perflex operator to enjoy the fascinating hobby of flash light photography. Pictures at night or indoors are as easily made as snapshots. Motion can be arrested and action photography of all types can be handled with surprising success. Unit consists of battery case, socket and 5-inch highly polished reflector—adjustable for height. Entire unit mounts on accessory clip on top of camera, where it makes contact with the built-in synchronizer. Works on speeds from 8 to 1/1250th. Each unit is furnished complete with operating instructions.

PERFEX 1-2-3 SPEED BINDER

An innovation—the first real advance in slide binder design in years. Just one component piece including glass, mask and binding edge. Extremely simple to use. Metallic surfaced paper reflects heat away from the slide—reduces absorption to a minimum. Complete slide measures 1 7/8 x 1 1/8 inches—will fit all standard 2x2 inch projectors. Reduces the work of minutes to seconds. Only three operations are required to complete the slide.

PER
DOZEN.....**50c**



1 Place film over masked opening. Fold up gummed bottom flap to anchor film in position.

2 With film anchored in position as shown above, fold down upper half of binder and moisten gummed flaps.

3 Folding over gummed flaps as shown above completes the slide. A real time saver and surprisingly economical.

EASTERN DISTRIBUTORS—RAYGRAM CORP., 425 4th AVE., NEW YORK CITY

CANDID CAMERA CORP. of AMERICA

844 W. ADAMS STREET

CHICAGO, ILLINOIS

Square Pix?

Many minifans use square format cameras such as the Robot and Rollei. I, for one, recently acquired a Rolleiflex to keep company with my Leica "G."

Now, why can't the paper manufacturers market a square format paper such as 7 x 7, 8 x 8, or 10 x 10 inches?

Brooklyn, N. Y.

JOHN J. SKRODENIS.

A popular small print size is 4x5 inches, which is almost a square. However, the standard paper sizes are not square but rectangular because rectangular compositions are more effective. Users of square format negatives can crop to create either a horizontal or vertical composition, as they please.—Ed.

"Doesn't Know His Bananas"

Henry Clay Gipson may know his photography, but he certainly doesn't know his bananas. His article (August MINICAM, page 15) shows a picture of Toquilla palms and calls them banana leaves. But do not take this too severely, as I would be glad to trade my knowledge of botany for Gipson's knowledge of photography.

Los Angeles, Calif.

C. S. HARCUTT.

Botanist Harcutt is correct, but the error which slipped in was not photographer Gipson's, who has travelled in South and Central America and knows the Toquilla palm when he sees it. This tree produces the fiber from which Panama hats are woven, and is grown extensively in Ecuador.—Ed.

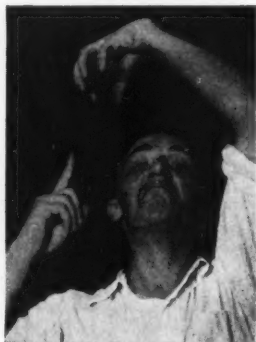
"No Freedom"

Sirs:

Every punk photographer who gets rejection slips and no checks finally loses courage and drags himself to a lonely attic. There he pours out his soul in a self portrait.

After reading the article on surrealism (July MINICAM), I made this self-portrait, titled "My Mood When Realizing the Futility of Buying Lightning Rods."

The exposure was made by opening the shutter in semi-darkness, taking my place and snapping on the flood lights with a foot switch. The exposure with two photo-floods in a reflector was one second at f/11 on Superpan Press.



ALFRED WEBER.

Bridgeton, N. J.

P. S.—If this picture isn't printed, I will

The TOPMOST in light-reading instruments! DeJUR-AMSCO Photo-Electric EXPOSURE METER

\$10.50

With Sling and Genuine Pig-skin Zipper Carrying Case

There's no getting around it—you need a meter. But, before you buy any meter, first see the new and improved DeJur-Amsco photo-electric, ultra-sensitive light reading instrument. Feature for feature, quality for quality, dollar for dollar—it's the meter buy of 1939. Weston patents, Weston film ratings.

DeJUR-AMSCO CORPORATION

SHELTON, CONNECTICUT

The TOPMOST in distance-reading instruments! DeJUR-AMSCO SUPERIMPOSED IMAGE RANGE FINDER

\$5.50

With Sling and Genuine Leather Carrying Case

A real triumph in range finder construction—providing more light, better sight and better pictures. Employing the scientific superimposed image principle, it permits easier and more accurate focusing from 2'6" to infinity. Mere words cannot do it full justice—invest ten minutes of your time giving it a fair test at your dealer! You will be convinced!

DeJur-Amsco
Exposure Meters and Range
Finders are made in America
for all the world. Ask for them
or write to Dept. M-9.

know that there is no more freedom of the press. I shall know that the press is controlled by lightning rod salesmen.

Imagination or Technique?

Sirs:

"Pictorial photography is the expression of what we see, . . . improved by the wealth and skill of our imagination and interpretive development. The camera and the lens, as such, are only the mechanical devices . . . the means to the beginning of pictorialism in photography."

Thus says Adolf Fassbender, the famous pictorialist. . . . I think magazines should have less about cameras, equipment, technique, etc., and more about how to train your imagination and interpretive development.

PAUL M. MOSSEL.

San Francisco.

"Print Contest"

Sirs:

I received your check for \$100 (Aug. MINICAM p. 59) and am at a loss to express my feelings. It certainly was the thrill of a lifetime to endorse such a princely sum. . . .

Thank you for the compliment you paid me by keeping some additional prints for possible future use. I would be pleased to write an article on figure studies. . . . Possibly the title, "Seeing the Nude," might offer an avenue for expression.

My general procedure in taking a picture usually consists of getting the model to move about and assume different natural attitudes. The success of any picture thus depends upon the ability to recognize a beautiful pose when it is presented. I prefer to stress naturalness over obviously posed art studies. Simplicity and clean-cut interpretation also occupy an important position in my philosophy. . . . A picture has to be seen before it can be captured.

If you think these ideas will form a nucleus for an article, I will be glad to see what I can do. . . .

GLEN FISHBACK.

Sacramento, Calif.

MINICAM readers may see an article in the near future by Print Contest Winner Glen Fishback.—Ed.

"Belly-Laff Agitator"

Sirs:

Three cheers for giving us the new and lively columns "Behind the News Camera" and "Superpan Panning." The next time I read the latter, I plan to have my 35 mm. film tank loaded and sitting in my lap so the belly-laffs can be put to work as a film agitator.

ARTHUR E. ARKMAN.

St. Louis, Mo.



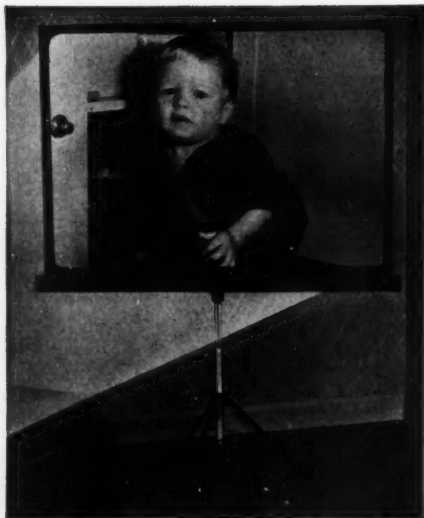
JOE LORBER

35
mm

WHAT IS YOUR SCORE OF GOOD SHOTS?

Shooting a wide range of photographic subjects and hitting the bulls-eye time after time requires a versatile film. Superior Pan brings up your score of good shots, because it is an "all-purpose" film. Its speed and wide latitude lets you count on a whole roll of good negatives. Focus a frame in your enlarger and you'll see the long scale gradation and fine grain size that makes a beautiful print. Next time try a roll of this "all-purpose" film—Du Pont Superior Pan.





"Caught in the Act!"

And when the picture is shown on Da-Lite Glass-Beaded screen, every detail of the expression is captured too. This screen with its superior light reflective qualities shows your movies and stills with life-like realism—the colors in full brilliance with all gradations of tone faithfully reproduced. Ask for a demonstration of Da-Lite Glass-Beaded screens. See the difference and you too will choose Da-Lite for your pictures. Available in many styles including The Challenger shown above which can be set up in 15 seconds—the only screen with square tubing. 12 sizes from \$12.50* up. Other styles as low as \$2.00*. Write for literature and name of nearest dealer.

*Slightly higher on Pacific Coast.



Reg. U. S. Pat. Off.

**Glass - Beaded
SCREENS**

DA-LITE SCREEN CO., INC.

Dept. 9M, 2723 No. Crawford Ave., Chicago.



By A. J. EZICKSON

NEW YORK State's police chiefs are demanding an amendment to the recent law making it a crime (third degree assault) to interfere with a news reporter or photographer or his apparatus when he is working in a public place. The amendment proposed would call for the display of credentials to be recognized by law-enforcing agencies.

A minor comedy occurred during the sailing of the liner Normandie from New York when cine star Charles Boyer sent word to Mrs. Eleanor Roosevelt by his manager that he wished to meet her. The First Lady acquiesced and they chatted, but a group of photographers standing nearby witnessed the meeting without lifting a camera. Boyer was heard upbraiding his manager afterwards for not arranging a shot.

A new focal plane synchronizer, to be known as the Sisto gun, will be marketed shortly by the Kalart Company. The inventor is Ernest Sisto, veteran New York Times Wide World photographer. Its chief advantages are that it can be adjusted for any type of flash bulb, and that there is absolutely no drag on the speed of the focal plane shutter so that the photographer can get the full benefit of high speeds. News photographers will not be limited while making flash shots to a certain focal length lens. The gun can be used for open flashes by operating a lever. The inventor believes that it will eventually eliminate use of front shutters. Speeds can be regulated from 1/50th to 1/1000th of a second. Sisto, one of the pioneers in speed gun development, was the first man on the street to use a synchronizer of his own creation, which worked perfectly.

Defeat is an unknown word to the news photographer. Harvey Lippman, New York free lance news photographer, was covering a fire.

He was training his camera on the smoke and flames when a fire truck whizzed past. Suddenly one of its big wheels snapped a hose around his right leg and dragged him for a few feet before he was able to free himself. His camera was thrown out of his hands onto the ground. Harvey took one look at the box and groaned. The front board was broken loose and the lens was disengaged. Harvey thought quickly, and acted. He dashed into a nearby store, procured some twine and tied the front board back into place. Then he shoved the lens into position stuffing the edges with bread dough to make it light-proof, and adjusted for a 12-foot shot. By ear, he synchronized his speed gun. Then he fared forth again and got a half dozen perfect shots.

The recent appointment of Tom Howard as chief photographer of the Chicago Times recalls the memorable day when Tom made that world-startling picture: the electrocution of Ruth Snyder at Sing Sing prison. It's still the Himalaya of picture scoops. Husky, handsome Tom was shaking like a leaf when he came tearing into the office of the New York News, bearing the exposed film and the tiny camera which he had strapped to his right ankle and carefully hidden beneath a billowy pair of bell-bottom pants. And imagine the nerves of the rest of us, editors and printers



Gosh, Joe, I can't do these fan-dancer pictures of yours! They get my developer too hot!

and squeegee boys alike, as the films were thrown into the "soup". Cries of dismay as the first film showed only the feet; then a completely out-of-focus shot; the third lifted to the light to reveal only a part of the body, and then, halleluia! the fourth and last, the picture! Guess Tom still shivers when he recalls that scene. Well, good luck, Tom, in your new job! You amply deserve it!

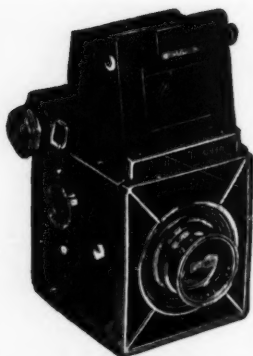
PRINTS YOU'LL PRIZE

- Omega-enlarged prints are unusually brilliant and blemish-free. You'll notice the difference! Double condensers give intense, even distribution of light; dustless metal negative carriers prevent dust troubles. Long focusing arm for easy, rapid focus. Girder-type construction. Model "C" for film up to 3 1/4 x 3 1/4 inches, \$97.50 without lens. Other Omegas: "A" for 35 mm. film—\$48; "B" (illustrated) for film up to 2 1/4 x 2 1/4 inches—\$65; "D" for film up to 4 x 5 inches—\$175. Prices slightly higher west of Rockies.
- Simmon Automatic Film Drier minimizes grain, eliminates dust, reduces drying time, \$27.50—\$29.50.
- Complete line of lenses: Simmon, Bausch & Lomb Tessars, Dallmeyer. Write for folder G.

SIMMON BROS., 37-06 36th St., Long Island City, N. Y.

OMEGA ENLARGERS

MADE
IN U.S.A.



THE PILOT Super

HERE at last is a roll film reflex with several features never before offered in a camera that even approached its amazingly low price range. Just check these six salient points one by one and you will see why the PILOT SUPER is the outstanding value in the one-lens reflex field:

1. Removable lens, permitting the use of long focus lenses.
2. Built in exposure meter.
3. Eye-level view finder, as well as a brilliant ground glass focusing screen.
4. Choice of two picture sizes (making either twelve negatives $2\frac{1}{4} \times 2\frac{1}{4}$ " or sixteen $1\frac{5}{8} \times 2\frac{1}{4}$ " on regular 120 film).
5. Metal focal plane type shutter with speeds up to 1/200th second.
6. Film winding and locking device that practically eliminates double exposures.

THE PILOT SUPER IS AVAILABLE WITH LENSES
OF THE FOLLOWING SPEEDS:

f4.5	\$28.50
f3.5	\$37.00
f2.9	\$45.00

Optical glass filters, leather cases and other accessories are available.

A $4\frac{1}{8}$ " Anastigmat f4.5 lens in focusing mount may be obtained to interchange with any of the above lenses \$20.00

The regular Pilot "6" which makes 16 pictures in the $1\frac{1}{2} \times 2\frac{1}{4}$ " size on 120 film and has five shutter speeds up to 1/150 second, is still available with the following lens equipment:

f4.5	\$21.50	f6.3	\$16.00
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If your dealer cannot supply full information or has not yet stocked the PILOT SUPER, write Dept. 39-B.

BURLEIGH BROOKS
INCORPORATED

127 WEST 42ND STREET NEW YORK



TIP TO THE MFGERS: Now that the public is really sold on the idea of sun shades, why doesn't someone make a camera line with built-on, collapsible shades?

DEFINITION: Moonlight Scenes—the result of skipping the test strip step in enlarging and ending up with a much overexposed print (and incidentally, a joy to the mfgers of blue toners).

BROMIDE: A depressant in either photographic chemistry or general conversation. Examples—KBr or "There are beautiful pictures all around you waiting to be taken if you can only SEE them."

MOST THREADBARE BROMIDE: "Pictures tell the story better than the printed word," or "Learning is 90% seeing," or "Take the picture magazines, for instance."

WHAT is Czechoslovakia doing to its photographic standing? Czechs are probably being told that the Swastika is twice as beautiful as anything else because it is actually two Hogarth S curves crossed and slightly modernized by the introduction of a few right angles!

SECRET AMBITION: To dress a camera store window using puns liberally on placards—sample: "Tanks for Everything"—probably makes you shutter to think of it!

ACROSS THE COUNTER QUESTIONS: "Which end of this thing do you look through?" "Is it true that the Rolleiflex Kodak takes darker pictures than the Zeus Leekas?" "Will that shutter stop a horse?" "Which is better, Weston or Shriner?" (Personally we have always had a warm spot for the Elks).

IN DEFENSE OF TEST STRIPS: Sometimes the "correct" exposure in enlarging is not always pictorially the best and the exposure-meter-photometer-slide-rule-graph-table method seldom gives a hint that an exposure not technically correct might be better.

10 IMPORTANT REASONS TO BUY THE F-R "SPECIAL"!

(THE NEW F-R ADJUSTABLE ROLL FILM TANK)

1. **GENUINE BAKELITE.** Constructed of genuine Bakelite, chemically resistant, especially compounded for photographic use.

2. **STAINLESS STEEL CLIPS.** Non-abrasive, non-fogging. To eliminate the danger of breakage during adjustment.

3. **ADJUSTABLE.** The flanges sturdily constructed so with stand lots of usage, are removable for quick drying and cleaning. See chart for all sizes to be accommodated.

4. **LOADING.** Can be loaded from either inside or outside—or both.

5. **CAPACITY.** Only 8 to 16 ounces of solution is needed. See chart for exact quantity for each size film.

6. **REVOLVING LIGHT SHUTTER.** Stops all light from entering and aids in the quick filling and distribution of solution over the film.

7. **CHECK STOP.** The patented F-R Check Stop prevents the film from unreeing during agitation.

8. **AGITATOR.** Built onto reel it has a hollow shell which allows a thermometer to remain in the tank during use.

9. **GUARANTEED.** Moisture and warp proof.

10. **\$1.85**

\$1.85



**SPEAKS FOR ITSELF
BEST AND IT SOUNDS
ALMOST TOO GOOD TO**

BE TRUE!

But it is true! Go to your dealer today. Get one! See for yourself its superiority. Check carefully these 10 buying points—and if you don't think you are getting the greatest value ever offered in a developing tank your money will be refunded instantly.

Fink-Roselieve, manufacturers of F-R Developing Tanks, the biggest selling tanks in the world, and acknowledged best by camera users and dealers everywhere, are proud to introduce this new F-R "SPECIAL" which they consider the best developing tank they have ever produced. F-R tanks may be imitated but they can never be copied. Look for the "little man" on the box before you buy. It is your guarantee.

The F-R "SPECIAL" will accommodate:

Quantity	Film		Capacity
*1 roll	35MM	(36 exposure)	8 oz.
*2 rolls	35MM	(18 exposure)	8 oz.
*3 rolls	#828	(Bantam)	8 oz.
*2 rolls	#127	(Vest Pocket)	11 oz.
*2 rolls	#129		12 oz.
*2 rolls	#120		14 oz.
1 roll	#116		16 oz.
With the addition of the F-R Double Flange† the following may be accommodated.			
*2 rolls	35MM	(36 exposure)	16 oz.
*4 rolls	35MM	(18 exposure)	16 oz.
*6 rolls	#828	(Bantam)	16 oz.

*At one time

†F-R Double Flange (Only)—\$5.50



FINK-ROSELIEVE CO., INC.

109 WEST 64th STREET • NEW YORK

BOSTON: 739 Baylton Street • CHICAGO: The Merchandise Mart • LOS ANGELES: 324 North San Pedro Street

DEFINITION: Composition—that which the Greeks had a formula for and which explains why you trimmed your print (unless your name is Weston).

TRUE STORY: Ralph of the unhirsute pate had a much sunburned top and was going down one side of the street when Jim, fellow camclub member, passed going in the opposite direction on opposite side of street when latter spied former. Greeting of latter to former, "Oh, overexposed, eh?"

DEFINITION: Resolving power—that which if your lens has, makes you decide to be a Purist if your paper negatives always turn out like a much erased charcoal drawing.

FIGHTIN' WORDS: "It's only a 2A box but it takes nice clear pictures."

HELPFUL HINT OF THE MONTH: Try strapping or taping your leather meter case on the upper part of a leg of your tripod, putting your camera on the pod, and then pulling over the whole affair one of those rubberized tennis racket covers and carrying the entire outfit in the back seat of the car—it's very handy not to have to stop to assemble it each time you want to use the outfit.

DEFINITION: Silhouettes—prints from those underexposed negatives which you thought would make good silhouettes anyway if not exposed enough.

HAD YOU EVER THOUGHT what a swell job photography is doing to popularize the metric system? A lot of young people who never could fathom it in school are probably now using it and liking it.

SOMETHING SHOULD BE DONE about these formulae that don't come out even with respect to the "A" and "B" solutions—after using so much of "A" with so much of "B" you find that one runs out before the other and leaves some of one left over.

JUST A SUGGESTION: We're gaga about color slides, too, but have you ever thought of using 35mm. reversible film to get black and white positives, cutting apart the frames, and binding into the usual 2x2 inch slides?—for lectures employing slides of graphs, maps, drawings, black and white copies, pictures of machines, etc.? Color is wasted in most such cases. And as for beauty, there are plenty of us who still think a good monochrome has much to commend it (you can still tone and stain such transparencies, too). Pu-leese, no tinting, even if your eyesight is good!

BE ENLARGER WISE

You may have invested in a precision-built camera, such as Leica, which produces negatives that are crisply sharp and full of detail. Placing such negatives in a poorly made enlarger, incapable of reproducing the negative's sharpness and detail, is like buying an expensive automobile and lubricating it with cheap oils.

Leitz craftsmen, makers of Leica cameras, realize that an enlarger is as important as a camera. Therefore, Leitz enlargers are as precisely built as the Leica camera. It is not necessary to outline the various features of Leitz enlargers, for every principle and design incorporated in them is the result of constant experimentation and experience — not momentary inspiration.

To obtain the utmost from small camera photography, you should work with a Leitz enlarger. Most popular of the Leitz enlargers are the Focomat I (illustrated) . . . a fully automatic enlarger for \$84.00 (without lens) . . . and the Valoy manually operated enlarger for \$49.50 (without lens). Each accommodates negatives up to $1\frac{9}{16}$ " x $1\frac{1}{8}$ ". Enlargers taking negatives up to $2\frac{1}{4}$ " x $3\frac{1}{4}$ " are also available.

Are your enlargements sharp?

Do they appear harshly grainy and with numerous scratch marks?

Is the illumination on your easel even?

Are your negatives held flat in the enlarger?



There is only one Leica, but there are many Leica models from which to choose. Illustrated is the Leica Model IIIb, with Summarit f:2 Universal Lens and Rapid Winder. Your dealer will explain the Leica Time Payment Plan. Write for FREE catalogs, Dept. B-9.

E. LEITZ, INC. • 730 FIFTH AVENUE • NEW YORK CITY

Leica

What is

PHOTOGENIC

The first of a series outlining the photographic types of beauty in faces and figures

EVERYWHERE, from Broadway to Hollywood Boulevard, from Paris to Rio, people are talking about photogenic figures and faces. Hollywood continually is making photogenic finds. But what is photogenic? Can you look at a face and predict in advance whether or not it will photograph attractively?

The secret of what is photogenic in a face comes under two headings, (1) anatomy, (2) picture personality. Mood and expression often make a picture and this is so important that "picture personality" will be taken up in a future article. For the present we will limit ourselves to the structural forms, the proportions and arrangement of women's features.

One of the most photogenic young women in the world is Miss Georgia Carroll (Fig. 2). Many famous lensmen consider her face to be almost perfect as far as the camera is concerned. She is easy to photograph.

The more photogenic a face, the less skillful need be the photographer. He does not have to spend time moving lights and changing camera angles in order to correct facial flaws. Nor does he complete a picture arrangement only to find that the composition emphasizes bad features and that he has to start all over again. Photogenic perfection, therefore, is sought after by commercial photographers. In the movies, it is equally if not more important. A perfectly formed face does not have to be so very carefully lighted. It continues to be attractive during the movement and action of a scene with its changing camera angles and lighting set-ups.

Now how does one recognize a photogenic face, one that always looks good to the camera? The first limitation of practical photography, therefore, is lack of depth. A

The camera sees planes of a face and shadow areas, and not a three-dimensional scene. The first limitation of practical photography, therefore, is lack of depth. A study of these planes and shadows in Fig. 2 will show why Miss Carroll is photogenic. Fig. 1 indicates the most prominent planes of one side of her face with the numbers 1, 2, 3, and 4. The main shadow areas are indicated as A, B, C, and D. Consider each of these planes separately. Plane 1, the forehead, is high, rectangular and almost flat in the area above the nose. The frontal

**By JOHN HUTCHINS,
A.R.P.S.**

Illustrated by the Author



STYLIZED SKETCH of the photograph on opposite page. The most prominent planes of the face are indicated by the numbers 1, 2, 3 and 4. The main shadow areas are indicated as A, B, C and D. The arrows indicate the direction of the compositional lines of attention

Fig. 1

bone protuberance "1" forms a cleanly defined plane on both sides of the forehead. This plane falls away into shadow at "A". This type of forehead lights easily. The somewhat prominent frontal bone planes pick up highlights nicely and the falling away of the face into shadow at the temples, imparts a feeling of roundness.

Not photogenic is the receding type of forehead (Fig. 4) that falls away quickly to a low hair line. It is almost impossible to photograph attractively.

A well shaped forehead should not appear to be of one single tone in the finished photograph. Highlights and delicate shadows should indicate the presence of these frontal protuberances or planes. The nose, plane "2", is straight. When a light falls across the face at a 45 degree angle, plane "2" picks up a high light. The nose becomes "bridged" by a shadow on each side as at "C". Bridging the nose is of paramount importance. Painters generally "shadow down" each side of the nose, and bring the bridge away from the rest of the face by use of a light tone along the crest of the nose.

A nose which has a flare of the bones, on one or both sides of the bridge, as in Fig. 5, is difficult to photograph because light picks up on the puffy bone protuberance on

THE PHOTOGENIC features of Georgia Carroll, are a delight to the illustrators who photograph this model for newspaper and magazine advertisements. The secret of her success is analyzed in the above sketch. View camera, $\frac{1}{4}$ second at f11, Defender XF pan film.

Fig. 2





A PHOTOGENIC face can be mangled by bad lighting. Everything is photographically wrong in this shot. Flat lighting results in lack of modelling. The camera angle distorts the forehead. Compare with the same subject in Fig. 8 on the next page. Fig. 3

each side of the bridge. The nose tends to "flatten out" in the finished print. It lacks the necessary modeling created by shadow "C" in Fig. 1. It is therefore difficult to photograph extremely flat noses. Their shape discourages good modeling.

The photogenic nose appears almost straight from every camera angle. Some noses are good from only one or two points of view. In shooting from an angle which makes the nose appear straight, the photographer may have trouble with a bad jaw line or the shape of the head, and other photographic faults of natural construction. Crooked noses spell trouble in portraiture.

Miss Carroll's nose is well proportioned in relation to the distance from the point of the chin to the hair line. Morton I. Berson, M. D., director of plastic surgery, at the Broad Street Hospital, New York City, says in *The Medical Record*, "The length of the ideal nose is one third of the facial length." A plastic surgeon in building a nose constructs it to conform proportionally with the other features of the face. The photographer must be especially careful in his lighting, to correct unproportional features as much as possible.

Returning to Fig. 1, plane "3" shows high cheek bones at the point of the plane, and they fall away cleanly into the shadow "D". Note the slight promontory at "4". Here is another cleanly hewn plane. All in all, there is almost an harmonious angularity to all of the well defined planes of this face.

The head, in general shape, is triangular, from the breadth of the temples down to the pleasing roundness of the not too-pointed chin.

A type of faulty bone construction characteristic of many heads is seen in Fig. 6. The triangle is practically reversed, the face being wider at the chin than at the temples. Do not make the fatal mistake of taking a picture of such a face from a low camera angle, especially when it is coupled with a broad nose and wide nostrils. Shoot from above.

Deep-set eyes are not photogenic (Fig. 7). In the sketch of Miss Carroll's face (Fig. 1), notice that there is quite a nice distance of separation between the upper eye lashes and the eyebrow. Many artists consider this facial characteristic to be a salient point of feminine attractiveness.



THE RECEDING TYPE of forehead falls away quickly to a low hairline. It photographs poorly. Fig. 4



FLARING BONES on the sides cause the nose to appear to "flatten out" when photographed. Fig. 5



THE NORMAL head is a triangle with the base at the forehead and tip at the chin. Fat faces reverse the triangle. Fig. 6



GOOD SEPARATION between eyebrows and eyelashes, necessary for the photogenic face, is lacking here. Fig. 7

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JUDITH RUSSELL is a Broadway actress whose facial features have inspired photographers and artists. Even the photographically perfect face, however, can be mistreated by the camera, as Fig. 3 demonstrates. View camera, $\frac{1}{2}$ second at $f/11$, Defender X-F Pan film. Print on Velour Black

Fig. 8

FOTO-FAKES *Exposed*



European newspapers published these as authentic news pictures

Photos from Three Lions

SKIING IN THE ALPS. Dramatic action shots are not easy to come by in any part of the world. These "speeding daredevils" are wood figurines. The "mountainside" is a table covered with flour. The ski tracks were made with a toothpick dipped in glue and the flying snow dust was created by an electric fan placed at the lower left.

KAPPA MAGAZINE, Zagreb, Jugo-Slavia, printed this as a macro-photograph of the *Urticularia*, a carnivorous plant which feeds on rotifers (tiny wheel-shaped animals). Actually the news photographer did not bother to use a microscope. He merely went to a museum and photographed a transparent mural.



"GLIDER OVER MT. ASAMA" (right). When the famous Japanese volcano erupted, a German photographer sold a series of photos of an oil tank fire as pictures of the smoking volcano. The Berliner Illustrierte Nachtausgabe not only fell for the fake, but also accepted this montage as a genuine picture of a daring glider flight made by scientists near the erupting volcano.

AFTER covering the trip of two honeymooning couples at Niagara Falls, a French photographer returned to Paris to find that not one of his pictures showed BOTH of the socialite couples at the Falls. Undismayed, he cut out a silhouette scene from one of his prints and pasted it on a falls scene. The hoax went undetected (lower left).

THE OSLO ILLUSTRERTE (Norway) assigned a photographer to find the cave men of Oregon. He delivered this print (lower right) to prove that cave men still dwelt in the United States. Actually, it was a posed portrait of a member of the Cave Men Club of Oregon. Printing phoney photographs is a violation of reader confidence unless the faked or doctored picture is clearly labelled as such and the photographer's tricks described.



NEW ANGLES



TIMIDITY. A high angle creates a mood while increasing the anonymity of the subject. Rolleiflex, f8, 1/250th. By De Palma from F. P. G. Fig. 1

for Your Subjects

By ARTHUR BRACKMAN



GET DOWN TO EARTH for punch in sports pictures. Rolleiflex, Superpan Press film, f_4 , $1/250$ th. By Baird from F. P. G. Fig. 2

To portray emotion or emphasize a mood shoot from an angle. New camera-angles add drama, emotion, and emphasis to a picture

IN angle photography, photographers have found a new toy which they have not yet learned to master. A photographer sees magazines featuring bird's eye views, worm's eye views, cock-pit-sight views, and often jumps to the conclusion that any unusual angle makes a picture great art.

All this needs a bit of clarification. There are just two legitimate purposes in shooting from an angle. The first is: to attain drama, and the second: to show something about a subject which cannot be depicted otherwise.

When angle shooting is resorted to merely for purposes of freakish effects, incongruous effects, clowning, grotesquery, it is the negation of art and has no real value. In attaining drama by means of angle shots, the photographer should know beforehand what he is after. The more dramatically he can portray his idea, the greater the impact and effect of his picture.

Let us take a few specific examples of shots in which angle can enormously increase the picture's power.

1. *Marching soldiers.* "Everyone loves a parade," its color, costumes, music, and martial tread. The feelings aroused by the display requires more than a prosaic shoulder-level shot. Some of the most dramatic parade pictures have been shot from the ground. Shooting up at the raised hobbled boot of an advancing trooper, his grim, helmeted



"CHEESECAKE." It's the angle that commands attention. A shoulder-level shot of four pretty girls looking at the camera might be passed over. Rolleiflex f8, 1/50th. By De Palma from F. P. ©. Fig. 3

face looming high above the camera, emphasizes the rhythmic march and tramp of boots.

2. *Sports*. The most telling pictures of athletes are often unusual angle shots—Lefty Grove with one foot thrust almost into the camera lens and high pitching arm drawn back in line with his leg—or Glen Cunningham shot from the ground level as he hurtles past.

Most effective angle shots of athletes portray them in the midst of action. No matter how gawky or ridiculous the pose, the feeling of vital athletic activity is

found in such pictures. With the pitcher it is usually the wind-up, with the football player, the moment of receiving a pass, with a prize fighter the second after a punishing blow has landed, with the tennis player the instant immediately before or after returning a serve.

3. *People*. Angle shots are especially effective in the photography of people. Portraits—made from a low angle often capture and emphasize the mood of the subject when a shoulder shot would be just another picture. Low-angle shots increase the strength of the features and

make the figure powerful and dynamic. Care must be taken, however, that the angle does not emphasize the person's bad features. Avoid ground shots of girls when heavy arms or large hips are conspicuous. Such shots also emphasize wide nostrils and heavy chins.

On the other hand, pictures of people made from a high angle increase the person's anonymity and at the same time create a mood.

4. *Sea and boats.* The trick of photo-

graphing an ocean liner by pointing the camera up at the prow in order to achieve a massive effect of towering strength has become commonplace. It is a good example, however, of the ease with which drama and atmosphere can be injected into the simplest of pictures. Steamship funnels also lend themselves to dramatic angle shots from a low point. A high angle can be effective, too, as in a view of a sailboat taken from the masthead fifty feet above the deck.

BOY MEETS GIRL. Low-point perspective captures and emphasizes the carefree spirit of these two children, eliminating an unwanted background. Rolleiflex, $\frac{1}{8}$, $\frac{1}{100}$ th, Gaston from B. S. Fig. 4





NEW YORK CABBY. A low angle emphasizes the dignity of the coachman and catches the sharply contrasting towers of two New York skyscrapers. Rolleiflex, $\frac{1}{8}$, $\frac{1}{50}$ th. From F. P. G. Fig. 5

object is to make the person who sees the picture exclaim, "I never noticed that before!"

Hundreds of photographs have been made of Theodore Dreiser. Most of these are run-of-the-mill, head-on shots. After Dreiser's masterpiece, "An American Tragedy," became a best seller, a photographer decided to make a portrait of Dreiser that would show him as a great and thoughtful man. Lighted from below and taken from a very low angle, the portrait revealed the deepset eyes, high forehead, the heavy chin, and the brooding intellect

The texture of water photographed from above often makes a bird's eye view of a surf scene dramatic, especially if a human figure is added as a center of interest. In Fig. 1 the solitary figure of a girl in the midst of the foam creates a mood which no straight-on could achieve.

5. *Animals.* The possibilities in the use of angles in the photography of animals have scarcely been touched, even with home pets. At the zoo, where it is possible to do so with safety, get close enough so the bars do not show in the picture and then work for an angle calculated to emphasize the most dramatic feature of the animal. In a giraffe it is the great length of leg and neck, in a leopard it is the dazzling pattern of the fur, in a stork the long legs.

A new angle on a subject can often do more than add drama—it can reveal facets previously unseen and unknown to even the keenest observer. In using new angles to reveal the striking, the unknown, or the characteristic, the photographer is entering a domain where his imagination and sensitivity are his only guides. His

in Dreiser's face which no other photographer had captured. Angle shooting must be done thoughtfully and purposefully to be effective.

Study the motion pictures for angles which convey meanings. For example, a picture made from above of receding tracks, or a shot at the driving wheels of an engine portray effectively the covering of great distances. A view made from below of an angry person increases the effectiveness of his wrath.

The choice of background is important in angle pictures. The safest background for a low shot is the sky. When buildings or other objects appear, be sure that they add to rather than detract from the effect sought as in Fig. 5. When shooting Primo Carnera from the ground to emphasize his size, don't dwarf him and ruin the effect by showing the Empire State Building at his back.

Pretty girls. Every week the publicity photographers of a hundred musical shows and movie productions grind out thousands of "cheesecake" (newsman's polite word for "sex") shots of lovely



A LOW ANGLE gives this shot emphasis and simplicity where a shoulder-high shot would have resulted in a confused mass of marching soldiers. Rolleiflex, Agfa Superpan film, f8, 1/100th, light yellow filter. By C. D. Truman. Fig. 6

ladies doing theatrical routines. Few of these shots are worthy to be remembered, but photographers with the ability to take good angle shots are frequently able to infuse drama into pretty girl pictures. For

a photographer to do this he must know more than just the trick of holding his camera low or high. He has to study his model's features, to determine which angle is most likely to make her look dramatic.

Anton Baumann and his

KODACHROME TECHNIQUE

By **STANLEY RAYFIELD**
Photographs by *Baumann*

Last interview of famous Leicaman reveals his dramatically successful methods of taking color pictures

ONE of the earliest photographers to understand and appreciate the advantages of the miniature camera for professional work, Anton Baumann was a minicam pioneer. He made the secrets of his camera technique available to everyone. Never holding back anything,

he revealed his methods to thousands of camera fans in lectures and demonstrations.

He went to Lexington, Kentucky, recently to shoot some color pictures. A 50-foot water tower offered a bird's-eye view. From the lofty tower he began framing a composition in the viewfinder of his Leica. Moving backward for a better angle, he stepped into space and fell half a hundred feet to instant death, camera in hand.

This tragedy makes all the more important what this well-loved worker had to say. Interviewed by MINICAM about his color work some time ago, Baumann, with his characteristic co-operativeness, outlined some of his rules for color work under eight headings.

1. *Flat lighting.* Only when flat lighting is used will the reading of an exposure meter be accurate enough for color work. Exposure should be doubled for side lighting and quadrupled for back lighting. This is not as important in black-and-white photography because the film has a wide latitude, but color film demands accuracy, since

ABOVE NEW YORK. Early morning sunlight seeping through New York haze emphasizes the towering height of the Empire State Building. Leica, panchromatic film, f4.5, 1/100, light yellow filter.

Fig. 1



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HOLIDAY. A white cardboard reflector placed about three feet from the model's face will eliminate the bluish cast often seen in outdoor Kodachrome portraits. Fig. 2

it has only a 50 per cent latitude. Beautiful effects can be obtained with side or back lighting although the color may not be what the eye saw when the shot was made. For scientific pictures use flat lighting to get true color. In pictorial work, however, any kind of illumination may be used to create a pleasing picture.

2. *Flesh colors in outdoor portraiture.*

The blue rays which predominate in daylight must be compensated for. In the first color picture made of a red-haired model wearing a bright, violet-colored sweater, posed against a blue sky, the face had a strong bluish cast. In the next picture Mr. Baumann used a cardboard

reflector about three feet square which reflected white light on the face. The white reflector counteracted the excessive blue rays so that the flesh tones were perfectly rendered.

For good rendering of flesh, white light and an accurate measurement of exposure are necessary. Blonde flesh reflects more light than does brunette and so requires less exposure. Tanned flesh reflects much less light and has a tendency to go purple unless fully exposed.

3. *When to photograph in color.* There is too much blue light at noon, so avoid making color pictures between eleven and one o'clock. Color rendition is best between ten and eleven and three and four. Good color results demand patience. Often it is necessary to wait hours for the sun to reach the right place.

4. *Composition.* In black-and-white photography an enlargement from a small fraction of a hasty snapshot will often make a pleasing or dramatic picture. Not so in color. The reproduction of the Indian on the inside front cover was made from the entire negative. The picture was carefully composed in the viewfinder before the exposure was made. Finding the best angle requires patience and thought.

5. *What lens to use and why.* Mr. Baumann used a Leitz universal viewfinder in planning his pictures. This not only aids in composing the picture but it shows the focal length of the most suitable lens. Anton Baumann used three lenses: the 35 mm., 50 mm., and 90 mm. For use with Kodachrome he recommended the

35 mm. lens. In black-and-white pictures an out-of-focus background gives the impression of depth and distance. Usually this enhances a picture. In color, however, the background must be much more in focus, otherwise the distant colors will "spread" into each other and produce an indistinct mass of doubtful tone value lacking brilliance and good color rendition.

6. *Foreground.* Mass one definite color strongly in the foreground. A variety of colors not only distracts the eye but makes the picture look spotty. In a color shot of a field of flowers, for example, it is advisable to photograph a few blossoms close up to hold the viewer's attention by their mass. Otherwise, the field of flowers will look like a lot of colored dots.

7. *Portraiture in color under artificial light.* Floodlights without diffusing screens produce too contrasty an effect with color film. With a combination of pale faces and dark clothes flesh tones will invariably burn out, so either make the models wear lighter colored clothes or use a dark make-up.

8. *A Pola screen is useful in color work.* It removes glare and reflections from all colored surfaces except those of metals. It also cuts through haze and has the effect of a yellow filter. With a Pola screen exposure must be increased about $2\frac{1}{2}$ times.

GOOD black-and-white prints can be made from color slides. Mr. Baumann used a $3\frac{1}{4} \times 4\frac{1}{4}$ film with anti- (Page 88, please)

ANTON BAUMANN surrounded by members of a camera club after a lecture. His keen interest in individual problems won him many friends among amateur photographers. Fig. 3

MAKING one of his famous giant enlargements. For these he used PMC No. 11 and Agfa Cashmere papers. Fig. 4

BAUMANN talking to an Indian Chieftain. (See color photograph on page 2.) His superb studies of Indian life won the admiration of the Indians themselves and he was made a chief of the Blackfeet tribe. By Mr. A. Carlson. Fig. 5



IN WALL STREET. The small, hurrying figures emphasize the canyon-like appearance of New York's Wall Street. Full exposure is essential to bring out details when back lighting is used. Leica, Dupont Superior, $f/9$, $1/20$. Fig. 6

SUNSET GLORY IN BRYCE CANYON. Printed from a copy negative made from a Kodachrome. Exposure was measured for the clouds and sky, over-exposing the foreground. While the color rendering was not what the eye saw, the effect was striking. Leica, $f/9$, $1/100$. Fig. 7



The Camera

UNDERWATER



SURFACE WAVES act as tilted mirrors reflecting light downward while the sand on the bottom reflects it upward, thus creating good general underwater illumination. Contax camera, Agfa Superpan Supreme film, $f/2.8$, $1/250$ th second. Fig. 1

By **ELIOT ELISOFON**
Illustrated by the Author

ONE of the last of man's photographic horizons to be conquered is submarine photography. Since the first unsuccessful attempt thirty-five years ago, men have tried to make photographs underwater with little success until the

invention of the *bathysphere* used by William Beebe and devices like the *photo-subs* now in use at Silver Springs, Florida.

Protecting the camera from water has offered the greatest difficulty. William

ER



ON a bright day, natural underwater lighting to a distance of fifty feet or more is equal to that of a brilliant cloudy day ashore. Contax camera, Agfa Superpan Supreme film, $f/2.8$, $1/250$. Fig. 2

THE AUTHOR with his Contax (below) in the metal cylinder of a photo-sub at Silver Springs, Fla. Super XX film, $f/6.8$, $1/50$. By Phil Mart. Fig. 3

Beebe, before the construction of his bathysphere, used a deVry motion picture camera fitted into a water-tight brass case the front end of which contained a glass port.

At Silver Springs, Florida, several launches known as photo-sub, have been equipped for underwater photography with a small metal cylinder suspended through the bottom of the boat. On opposite sides of the cylinder are plate glass windows 18x24 inches through which pictures can be made. There is just room enough in





VISIBILITY and definition in clear spring or ocean water are almost as great as on land. In cloudy water, however, definition is poor even at close range. Contax camera, Agfa Superpan Supreme film, Champlin 15 developer, $f/8$, $1/50$ th. Fig. 4

the cylinder for the photographer and his camera.

Successful photography under water depends upon several factors—the depth at which the photographer is working, the kind of day, the water, and the background.

Exposure can be determined by a meter. A bright, sunny day is necessary and the best results are obtained between ten and two o'clock. Under these conditions, the natural lighting of the water to a distance of 50 feet or more on a plane is like that of a brilliant cloudy day, but the tinge is blue-green instead of the yellow or white of sunlight.

The light depends not only on the kind of day but on the depth at which the picture is made, the clearness of the water, and the background. The greater the

depth, the smaller the amount of light. In clear water, light can penetrate much deeper than in turgid, cloudy water, since there are fewer solid particles to deflect it. Not only is there more light in crystal clear water but the definition is good to a greater distance.

In fairly shallow places, the light will be almost the same from the surface to

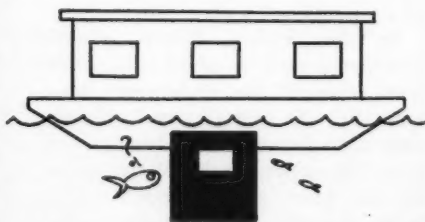


DIAGRAM showing the position of the cylinder (in black) on photo-sub. Fig. 5

the bottom if the bottom is covered with a good reflecting medium such as sand. The surface waves act as tilted mirrors to reflect the light downward while the sand reflects light upward thus creating good general illumination.

Aquatic plants (See Fig. 6) absorb rather than reflect light, thus increasing the amount of exposure necessary.

In most waters beyond 25 feet from the camera, the haze is too great to pick up more than vague outlines. In clear water such as that at Silver Springs, however, photographs can be made at greater distances.

When shooting pictures through a pane of glass, care must be taken to eliminate reflections. The camera should be held close to the glass and all other light sources cut off. Any light in the bell will be reflected on the glass and registered on the film. A polaroid lens will eliminate this glare, but a substantial increase in exposure is necessary when it is used.

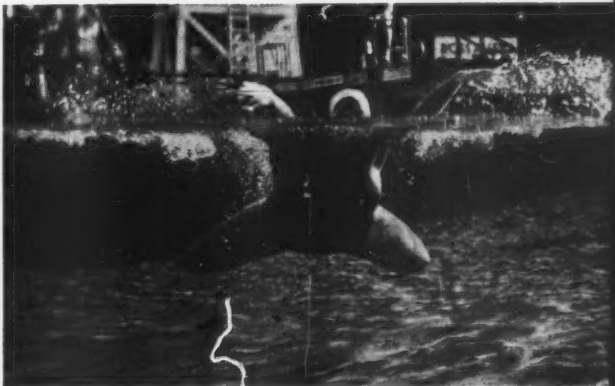
The camera lens must be parallel with the glass to prevent distortion. Photographed at a sharp angle through glass, an image takes on shapes similar to those seen in distortion mirrors.

Underwater distances are deceiving because of the refractive quality of the water. The water has the same sort of effect as the use of an auxiliary lens such as a portrait attachment in front of the regular camera lens. Fig 7 is the result of considerable experiment. The swimmer was first placed at a normal distance from the camera for a full length shot. This resulted in a semi-closeup. Experiment showed that objects

(Page 83, please)



AIR BUBBLES reflect light (above). Their beauty can be seen against a dark background such as the plant growth in this picture. Contax, Agfa Superpan Supreme, Champlin 15 developer f2.8, 1/100th. Fig. 6



THESE TWO "SPLIT FRAME" SHOTS were made with the camera lens half above and half below the surface of the water to illustrate the effects of refraction. Agfa Superpan Supreme film, f6.3, 1/50th. Figs. 7 and 8



HOW TO MATCH *Emulsion* and SUBJECT

MODERN FILM *for Your* CAMERA

Select not only for emulsion speed, but also for color correction, resolving power and latitude

By KENNETH HOUSTON

IN the dear, dead days of prohibition, Ben Bernie, the orchestra leader, peddled over the radio a brand of malt which he described as "the mostest of the bestest." With little modification the same situation holds true for the amateur film industry of today. Modern films don't have sex appeal, but, judging from some of the glowing accounts, that's all they lack.

The business of selecting the right film for the right picture can and ought to be made easy. For example, the job would be simplified if you could point to a dozen or so brands and say, "These are awful, terrible, don't use them." But film is big business run by outfits who can't afford to put out junk, especially for amateur consumption, so no blunderbuss eliminating can be done. However, it requires no overdose of brains to figure out that when there are almost forty different brands competing for the privilege of being underexposed in your camera they can't *all* be intended for the same purpose. So let's try to feel our way around and perhaps introduce some orderly classification of all these hyper-super double-barrel film brands.

Right off, you'll have to realize that there is no such thing as a "universal" film—that is, any one which will function equally effectively for all the various purposes of photography. Instead, films divide into broad groups, each of which is best suited to one type of picture situation. Once you get the hang of these basic differences, film selection becomes a matter of intelligent choice rather than, "One of these, one of those, and one of them in the pretty pink box."

There are three main types of emulsions for black-and-white amateur photography: orthochromatic film, medium-speed panchromatic, and high-speed panchromatic. These



ORTHOCHROMATIC film and a light yellow filter provide a perfect combination for outdoorsy scenes. Rolliflex camera, $f/5.6$, $1/50$ th second. "Autumn Allegory" by Kalman Szollosy.

nice, mouth-filling words are often affectionately known as ortho, pan and superpan.

Instead of plunging knee deep into a swirl of brand characteristics at this point, we'll get a lot farther if we take apart a typical film emulsion and see if we can figure out what makes it tick. That way we'll know what to look for when we finally tackle the individual brands. So let's put down a few words and neatly label them:

FILM EMULSION CHARACTERISTICS

1. Resolving Power
2. Color Correction
3. Latitude
4. Speed
5. Grain Structure

It doesn't make any difference in what order you list



FOR PORTRAITS, whether simple or insidious, any slow or medium speed panchromatic film can be used. Eastman Portrait Pan, 1/2 second at f/8. Print on Illustrator's special. By Hans Jorgensen.

these essentials so long as you know they exist. Let's look at them as above, resolving power first.

Resolving Power. Resolving power in a film has definite limits, like that of image sharpness in a lens. It is entirely apart from grain. When you fail to focus a lens properly, you get a fuzzy image. Similarly, if the film resolving power is low, it won't be able to render fine detail. The picture will lack snap or brilliance. The negative won't enlarge well and there'll be general hell to pay.

You get the best resolving power from the slower films although the newer high-speed films have more than you'd imagine. For big blow-ups in enlarging, films like Agfa's Fine Grain Plenachrome or Finopan and Eastman Panatomic-X have the best resolving power as has also DuPont Micropan.

Color Correction. Everybody knows that black-and-white photography is pos-

sible because film emulsions record different colors as varying shades of gray. However, not all emulsions record a color, as for example red, as the identical shade of gray, while some films won't record red at all. No film has yet been made which can stand up alongside Mother Nature and match the truly marvelous correction of the human eye. Not that manufacturers can't make films sensitive to any particular color, even hypersensitive, as we shall presently see. What they can't achieve, as yet, is the *precise* color balance of the eye.

This is where we encounter the first real problem in film selection. If you expect proper results you must buy your film on the basis of the color balance you happen to want at the moment. Consider the ortho films. Because they lack red sensitivity many amateurs

habitually pass them by for panchromatics. However, you'd be surprised to find how little red there is in the average open landscape or seascape. Cut down the excess blue sensitivity with a yellow filter such as the Wratten K-1 or K-2 and the ortho is an ideal film for outdoor work. It yields brilliant negatives with the resolving power right up where you want it. Another virtue of the ortho is its latitude as we shall soon see.

Possessed of the best all-around color balance are the pan films. Red sensitivity is their outstanding characteristic along with some modification in the region of the blue, although this latter is still in excess of the ideal ratio. Resolving power is good but latitude is cut down.

→
FOR NIGHT shots, the fastest available film usually gets the assignment. "In Deep Shadows" (right) was taken at night in Riverside Drive Park, New York City. Contax III, Dupont Superior film, f/2, 30 seconds. Development in DK20. By Stanley Katcher.



FILMS CLASSIFIED AS TO PURPOSE

Filter	FOR LANDSCAPES	FOR PORTRAITS		FOR SPEED PHOTOGRAPHY		FOR CANDID SHOOTING		FOR FLASH WORK		FOR NIGHT PHOTOGRAPHY
		Daylight	Mazda	Daylight	Mazda	Daylight	Mazda	Synchro-Sun	Mazda or Night	
None	Plenachrome Verichrome Express Superschrome	Finopan Verichrome Plenachrome Express Superschrome Superpan Supreme	Ultra Speed Pan Panatomic-X Finopan F. G. ParPan Superpan Portrait Superpan Supreme	Superpan Press Triple S Pan Ultra Speed Pan Superpan Press Plus-X Superior Plen. Press	Ultra Speed Pan Super-XX Superpan Press Superior	Plus-X Superpan Superpan Press Super Plen. Press	Ultra Speed Pan Super-XX Superpan Press Superior	Plenachrome Verichrome Superpan Plenachrome Finopan	Plus-X Superpan Superpan Press Triple S Pan	Superpan Press Tri-X Pan Superpan Ultra Speed Pan Super-XX Triple S Pan
K-1	Plenachrome Verichrome Peronnia	Plenachrome Verichrome Express Peronnia Super Plenachrome	Plus-X Superpan Superpan Press F. G. ParPan Neo Peronnia	Superpan Supreme Plus-X Superpan Press Super Plen. Press Superpan Press Ultra Speed Pan Triple S Pan		Super Plen. Press Plus-X Superpan Superpan Press Superpan Press		Plenachrome Finopan Panatomic-X Superpan Panchromosa Micro.	Super-XX Triple S Pan Superpan Superpan Press Superpan Supreme	
K-2	Super Plenachrome Finopan Panatomic-X F. G. ParPan	Finopan Panatomic-X F. G. ParPan Panchromosa Micro.	Portrait Pan Plus-X Superpan Superpan Press Ultra Speed Pan	Super-XX Ultra Speed Pan Triple S Pan Super Plen. Press Superpan Press Superior		Super Plen. Press Plus-X Superpan Superpan Press Superpan Press		F. G. ParPan Panatomic-X Finopan Superior		
G	Super Plenachrome Superpan Supreme Plus-X Superior Finopan	Super Plen. Press Super Ortho Press X. F. Ortho Press		Super-XX Ultra Speed Pan Triple S Pan Tri-X Pan		Superpan Press Superpan Superpan Press Super-XX		Plus-X Superpan Superpan Press Panchromosa		
X-1	Panatomic-X Finopan Superpan Supreme F. G. ParPan	Plus-X Superpan Superpan Press Panchromosa Superior	Superpan Supreme Superpan Press Ultra Speed Pan	Super-XX Ultra Speed Pan Triple S Pan Tri-X Pan Superpan Press		Superpan Superpan Press Plus-X Superpan Superpan Press				
X-2	Plus-X Superpan Superpan Press Superior		Super-XX Superior				Ultra Speed Pan Super-XX		Super-XX Ultra Speed Pan Triple S Pan Tri-X Pan	
A	Superpan Supreme Super-XX Superpan Press X. F. Pan	Tri-X Pan X. F. Pan Superior						Ultra Speed Pan Super-XX Superpan Superpan Press		

FILMS CLASSIFIED AS TO BRAND AND SPEED

ORTHOCHROMATIC			PANCHROMATIC		
Slow	Moderate to Fast	Slow to Moderate	Moderate to Fast	Fast	Superspeed
Agfa: F. G. Plenachrome (m) Standard (r) Gevaert: Express Superchrome (r) (p) (m) Pernitz: Neo Persenso (m)	Agfa: Plenachrome (r) (p) Super Plenachrome (r) (p) Super Plenachrome Press (c) S. S. Plenachrome (c) Defender: X. F. Ortho Press (c) Eastman: Verichrome (r) (p) Ortho Press (c) (p) Super Ortho Press (c)	Agfa: Finopan (r) (p) Superpan Reversible (m) DuPont: F. G. Parpan (m) Gevaert: Panchromosa (r) (p) (m) Panchromosa Micrograin (m) Pernitz: Pergrano (m) Perpantic (m)	Agfa: Superpan Portrait (c) Isopan (c) Supersens. Pan. (c) Eastman: Plus-X (m) (r) (p) Panatomic-X (p) (r) (c) (m) Portrait Pan (c)	Agfa: Superpan Supreme (m) Defender: X.F. Pan (c) DuPont: Superior (m) Eastman: Super-X (m) (p) (r)	Agfa: Triple S. Pan (c) Ultra Speed Pan (m) Superpan Press (p) (r) (m) (c) Eastman: Super-XX (r) (p) (m) (c) Tri-X Pan (c)

KEY: (r) roll film; (p) film pack; (c) cut film; (m) 35 mm. film.

In the high-speed pan group, color balance is again upset, this time with an overloading of red. The unbalance is deliberate. These films were primarily designed to be used indoors by artificial light which abounds in red rays. By being able to use more of the red rays the superspeed film is able to function at faster exposures than would a more normally balanced emulsion.

At this point we encounter a wee joker. What we have been saying about color balance applies to films in the broad classifications as already noted. But when you take a particular film brand and compare it with another within its own type you run afoul of minor variations. Thus, Agfa's Ultra Speed Pan and Eastman's Super-XX are both high-speed pans, but their color balance is by no means identical. This holds true for all the pans, whether fast or slow. Parallel films of different manufacture vary in color balance. What do you do about it? Well, if you're smart, you pick out the firm whose products you like best for reasons of your own and you standardize on its brands.

We can indicate, within broad limits, the sort of color balance you can expect from the various film types. The Color Sensitivity Tables show just how colors are rendered by the various film types, also what happens to color balance

when you use filters. Your own brand, as we have said, may produce slightly varied results, but once you have noted the difference you should have no trouble in the future. Symbols used are: L—Light; V L—Very Light; M—Medium; M D—Medium Dark; D—Dark; V D—Very Dark.

Latitude. When your Aunt Bessie takes her camera outdoors and determines exposure by dividing her telephone number by half her age, yet gets a decent print most of the time, it's film latitude that's

ORTHO FILM
Color Sensitivity Table

	Violet	Blue	Green	Yellow	Orange	Red
No Filter	V L	M D	M D	D	V D	V D
Light Yellow Filter	L	M D	M D	D	V D	V D
Medium Yellow Filter	M	D	L	L	D	V D
Dark Yellow Filter	M	D	L	L	D	V D

MEDIUM SPEED PAN FILMS
Color Sensitivity Table

	Violet	Blue	Green	Yellow	Orange	Red
No Filter	M	M D	M D	L	L	L
Light Yellow Filter	M D	M D	M D	V L	V L	V L
Medium Yellow Filter	D	D	M D	V L	V L	V L
Light Green Filter	M D	D	L	M	M	M
Medium Green Filter	D	V D	V L	M D	M D	M D
Orange Filter	V D	V D	D	L	V L	V L
Light Red Filter	V D	V D	V D	V L	V L	V L
Dark Red Filter	V D	V D	V D	V L	V L	V L

HIGH SPEED PAN FILMS
Color Sensitivity Table

	Violet	Blue	Green	Yellow	Orange	Red
No Filter	V L	V L	M D	V D	V D	M D
Light Yellow Filter	V L	M D	M D	V D	V D	M D
Medium Yellow Filter	M D	M D	M D	V D	V D	M D
Light Green Filter	M D	M D	M D	V D	V D	M D
Medium Green Filter	V D	V D	V L	V L	V L	M D
Orange Filter	V D	V D	V D	V L	V L	V L
Light Red Filter	V D	V D	V D	V L	V L	V L
Dark Red Filter	V D	V D	V D	V L	V L	V L

THE RESPONSE of an emulsion to dominant colors with and without filters. "L" indicates that the indicated color is interpreted in light tones in the resultant print. "V. L." = Very Light; "M." = Medium; "M. D." = Medium Dark; "D." = Dark; "V. D." = Very Dark.

doing the trick, not Bessie's psychic powers. Latitude in a film, like heart in a fighter, is its ability to take it on the chin. There is a theoretically ideal exposure for each film which it only too seldom gets. The degree to which you can safely violate the ideal, either as underexposure or overexposure, is the film's latitude.

Now just as everybody has some money, the question being how much, so every film has some latitude. This is determined from an inspection of the exposure curve of the film under consideration. The exposure curve of a typical film emulsion lies flat on its belly for a while at the bottom of a graph, then swoops gracefully upstairs and, finally, flattens out and goes back to sleep again up topside. Some place along the climb the rate of ascent is so steep as to make practically a straight line.

The straight-line portion of the curve is the region of proper exposure. Films with a long straight-line will take quite a lot of kicking around in exposure while those with short straight-lines have to get proper exposures or else. The lesson to be derived is plain enough. If you're dealing with tricky subjects where proper exposure is largely a matter of guesswork, or if you're working in brilliant light with heavy contrasts of light and dark, or working without a meter, or when for any private reason you're out to do a bit of potshooting, why not pick a film with plenty of latitude?

No question about it, you get the most latitude from the orthos like Agfa's Plenachrome, Eastman's Verichrome, and Gevaert's Superchrome. Another thing about latitude, it's always in the direction of overexposure. Tests have indicated that you can expose these films by as much as a couple of hundred times too much without burning them up completely whereas latitude in the other direction is nowhere nearly as great. When in doubt, pile on exposure, is as good advice as you'll ever get when it comes to latitude.

While the orthos have maximum latitude, the moderate-speed pans have a

fairish amount. Plus X and Superpan Supreme will hand you a good margin, but when you get up to the topflight pans you've pretty well left latitude behind.

Film Speed. In an age of speed and zing, it is to be expected that film speed will bulk largely in the amateur's attention. That's fine as far as it goes and has unquestionably stimulated the manufacturers to evolve improved film types. In another sense, however, our concentration on film speed is less desirable, since it tends to distract attention from other film characteristics frequently more important.

Let's look at this fascinating business of speed. It is determined by complex measurements via any of the several systems of which the two best known in this country are American Scheiner and Weston. Incidentally, the two systems start from different premises so that the figures of one are not readily translated into those of the other except for purposes of loose comparison.

Speed in a film is a thoroughly unstable commodity. The working speed will vary with the age of the film, the kind of film developer used, with the density or thinness desired in the negative and, even, on manufacturing conditions difficult to control which will occasionally make one batch of a brand slower or faster than previous batches.

The Weston Electrical Instrument Corporation, pioneers in film speed measurement, have in their latest emulsion rating bulletin recognized the difficulty of assigning fixed speed values. Instead, each film now is given a group number. This allows each user to allow for such variables as developer used and negative density desired. For example, the group number of Agfa Superpan Supreme, in daylight, is given as Weston 50. The speed range of this number is Weston 40 to Weston 64, meaning that the user can decide for himself whether to use a rating of 40, 50 or 64.

The fastest films currently available are Weston group number ratings of 100 for daylight and 64 for artificial light.



FOR CLOSEUP FLASH shots, a medium speed panchromatic film provides adequate speed with minimum graininess. By Ewing Krainin from Lowndes-Ewing.

Grain Structure. There was a time, not so long ago, when at the very mention of film grain your average amateur would pluck out his hair in double handfuls. We have happily been spared national baldness by the advent of the new fine-grain emulsions such as Agfa's Finopan and Superpan Supreme and Eastman's Panatomic-X, and Plus-X. In these, grain

structure has been reduced to the point where it is finer than the film resolving power, that is, the image will break down before grain shows.

As you move up the speed scale, you slowly sacrifice grain structure, though not nearly to the same extent as formerly. Medium speed pans have grain compara-

(Page 85, please)



By JACOB DESCHIN, A. R. P. S.

Combine economy with efficiency. Purchase or build equipment according to a long-range plan



your own pictures. There is no thrill comparable to making your first contact print and watching your pictures slowly come to life before you in the developer tray.

The walls of the home darkroom do not have to be black and if the printing or enlarging is done at night, the room need not even be perfectly light-tight. A few

A CORNER of the basement, a closet or attic room—any of these can provide a home darkroom where you can have the fun of developing and printing

slivers of light through doors or window shades do no harm if properly controlled. How to test for the safety of your darkroom will be described later.

An introduction to contact printing requires no more than a safelight bulb, an M-Q tube of developer and a package of sensitized paper—all costing less than a dollar. Soup plates, or enamel-lined or glass baking dishes can serve as developing trays, a piece of glass will hold the negative on the paper, a sink or bathtub will do for washing, and the kitchen clock for timing.

But improvised equipment is less fun to work with and less permanent than standard materials obtained at your photo supply dealers.

The photograph at the top of this page



DARKROOM

shows how simple the equipment for contact printing may be. Illustrated are a yellow printing lamp, white lamp, large tray for fixing and washing, package of fixing solution, graduate, printing frame, tube of developer, package of sensitized paper, tray for developer solution, and two print tongs. The tongs are dissimilar to facilitate keeping each in its proper tray.

A lot of time can be saved, however, and an excellent start made by the purchase of one of the "home developing kits" available at various prices from \$2 up.

Today's beginner may want only to become acquainted with the routine of developing and contact printing, but he soon will wish to see his negatives enlarged.

While it is always advisable to buy the best equipment possible, the amateur photographer will not lose by doing his experimental work with a low-priced enlarger. Choose an enlarger equipped with a lens, unless your camera is of the interchangeable lens type which permits removal of the lens for use on an enlarger bearing the same size lens mount as the camera. Enlargers of this type are available for many cameras, including Leica, Contax, Exakta and Argus.

It is just as well to begin in a small way and add to one's equipment gradually. The trade-in allowance which makes it possible to turn in a piece of used equipment in part payment of a better one, makes losses small.

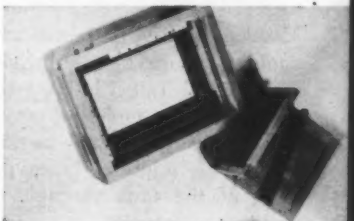
Tanks for developing roll film are available for roll film 16 mm. in size and larger. These are loaded by running the film into the grooves of a reel made of stainless steel or bakelite, the reel is then placed in the



TANK for developing roll film. Loading is done by running the film into the grooves of the reel, placing it into the tank and covering. Fig. 1



A SAFELIGHT with interchangeable glasses. A bright orange glass is used for printing and enlarging. Fig. 2



A PRINTING frame with an adjustable mask. Fig. 3

A TRIMMING board for prints up to 8x10 in. Fig. 4





tank, the cover put on and the developer poured in through a light-tight hole in the center of the cover. Some of the tanks take only one size film, others can be adjusted for several miniature sizes. Prices vary from about \$3 to \$10.

Darkroom lights vary from a red glass bulb to large safelights with changeable glasses. An inexpensive model is suitable for amateur use. A set of interchangeable safelight glasses for a fairly complete outfit would include the Eastman Series OA orange safelight for darkroom illumination while printing, the Series 2 for developing orthochromatic film and the Series 3 for slow panchromatic film. The Agfa equivalents of these glasses are No. 104 for printing, No. 107 for orthochromatic film and No. 108 for slow panchromatic film. To start with, only the printing light (Wratten OA or Agfa 104) is an absolute necessity.

Prepared developing and fixing solutions are recommended for the beginner, either in powder or liquid form.

Complete absence of light in the darkroom is needed only for film development. As loading the film tank takes but a few minutes, any light-tight closet will do. The film is rolled into the reel, the reel is placed in the tank and covered. The rest of the process then is carried out in daylight, the solutions being poured in and out of the tank through the light-tight vent.

Before starting work in a new darkroom, the following test can be made. In the light of the darkroom safelight, a piece of printing paper or film, of the type to be used, is placed on the darkroom work table and one half of the test strip is cov-

ered with a piece of cardboard, so that half of the test strip will be covered and half exposed to the normal illumination in the darkroom. After three minutes, the test strip is developed, fixed and examined in a white light. If the two halves of the test strip are perfectly clear, then the darkroom illumination is perfectly safe.

BEGINNER'S SHOPPING LIST

FOR DEVELOPING NEGATIVES

- Tank, adjustable or the correct size for the negatives
- Darkroom lamp with Wratten OA or Agfa 104 safelight
- 32 oz. graduate
- Funnel
- Thermometer
- Stirring rod
- Film clips
- Chamois or sponge (cellulose or viscose) for removing excess wash water from films
- Prepared fine-grain developer (liquid or powder form)
- Quart-size bottle with screw-on cap for storing developer
- Acid-Hypo—to make one half gallon
- Half-gal. on bottle or jug for storing fixing bath

FOR CONTACT PRINTING

- 3 trays
- 32 oz. graduate
- Printing frame or an electric printer
- Masks (for white margins)
- Stirring rod
- Print tongs
- Paper developer
- Amber quart-size bottle with screw cap for storing developer
- 28% acetic acid, for short-stop
- Acid-Hypo—to make one half gallon
- Contact paper of desired size in three grades: soft, medium, hard

FOR ENLARGING

- Enlarger
- Easel
- 2 trays 8"x10"
- 1 deep tray for fixing bath
- 32 oz. graduate
- Darkroom safelight, Eastman OA or Agfa 104
- Darkroom clock
- Stirring rod
- Print tongs
- Paper developer
- Bottle, quart-size, with screw cap for developer
- 28% acetic acid
- Acid-Hypo—to make one half gallon
- Half-gallon bottle or jug for storing fixing bath
- Enlarging paper of desired size in three grades: soft, medium and hard

(Page 81, please)

\$\$\$ IN REAL ESTATE

Every "For Sale" Sign Means Business for a Camera

REAL estate agencies handling the sales and rentals of property, have discovered a valuable, time-saving aid in the camera. In the past when a prospective home-buyer came to a broker's office and said, "I'm looking for a small house in a good section. What have you?" the salesman escorted the prospect from one house to another. This procedure often took a day or more of the salesman's time.

Many agencies have changed this time-wasting program by keeping in their offices a snapshot file of their listings. A prospective buyer is first shown these pictures, from which he selects the houses that he wishes to look at. Thus, instead of showing a buyer twenty or thirty homes, the salesman need only take him to a few.

Discovery of the value of pictures in the real estate business has opened up a new money-making field for the

amateur photographer. Follow the steps below if you're interested in a full or part time business.

1. Consult the classified section of your
(Page 81, please)



TAKE SEVERAL views to show off to advantage the architectural features of each building. Choose a bright, sunny day and use a filter to get an interesting sky. Super Ikonta B, Agfa Superpan film, f/8, 1/50, medium yellow filter. By Dick Wurts.

By HAROLD S. KAHN



Ready-Set ENLARGING

By C. W. GIBBS, A. R. P. S.

Fixed Focus enlargers provide rapid printing when many small prints are desired. For beginners, it is a simple and practical introduction to the fun of darkroom work.

A BOON to the *no-time-for-enlarging* photographer is the modern fixed-focus enlarger. It not only makes enlarging easy for the beginner, but it makes quantity production of small enlargements possible to the time-harried minicam owner with quantities of negatives.

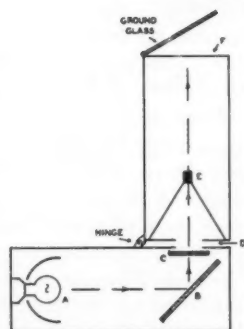
Fig. 2 is a diagram of a fixed-focus enlarger. "A," the lamp, is a 110-volt, 120-watt clear projection bulb. Exposures on an over-exposed roll can be reduced by substituting a photoflood bulb, but the longer life of a standard bulb means more uniform illumination over a longer period of time and the creation of less heat.

A small reflector fitted around the bulb concentrates the light on the mirror, "B," placed at a 45° angle. It throws the light up to an opal glass, "C," which is under the negative aperture. The opal diffuses and smooths out the field the negative which would occur if the bulb were placed immediately below the negative.

The negative holder, "D," consists of two polished metal plates which grip the film around the picture area. Glass pressure plates are not used because of the dust hazard. Though this model is designed for standard 35 mm. film, the same picture area in a larger negative also can be enlarged.

Mounted at the peak of a small cone inside the upper section of the enlarger is the lens, "E". This is a simple lens normally working at *f*11. For maximum sharpness a cap is screwed over the lens to reduce the aperture to *f*16 and the exposure time is increased.

The paper holder, "F," is covered by a ground glass. By turning on the light and looking at the ground glass the negatives



USING the Federal fixed-focus enlarger (upper). To move the negative lean lightly against the projection housing to release the pressure. Fig. 1

DIAGRAM (lower) of the Federal enlarger showing the light source, A, mirror, B, negative holder, D, lens, E, and paper holder, F. Fig. 2

may be centered as desired. The paper holder normally takes paper measuring 3½ x 5 inches. This is the standard 5 x 7-inch sheet cut in half. If only a small section of the negative is interesting, a mask taking paper 2½ x 3½ inches can be used. A paper cutter supplied with the machine makes it easy to divide the paper in halves and quarters.

When a print is to be made the upper portion of the machine is tilted back slightly and the negative laid over the aperture. The top is allowed to drop in place. If the machine is placed near the edge of the work table for operation, a

little pressure of the body serves to relieve the pressure on the film and leaves both hands to adjust the negative, as in Fig. 1. When the negative is centered, the top is allowed to fall into its normal position, holding the negative securely.

Any of the standard bromide (enlarging) papers such as Brovira, Novabrom and PMC, can be used, so a variety of surfaces is available. Using Novabrom

most enlarging papers is $1\frac{1}{2}$ to 3 minutes. Expose so that full development time of 3 minutes may be allowed. Use one kind of paper and learn its characteristics. You will be able to do better and more rapid printing.

In selecting the grade of paper remember that the light in this enlarger is diffused. The diffused light produces a softer print. If you have been accustomed to using a condenser enlarger, use paper a grade harder when printing with the fixed-focus enlarger.

Quantity production is easy with a little experience. The secret lies in exposing a number of prints and then developing them at one time.

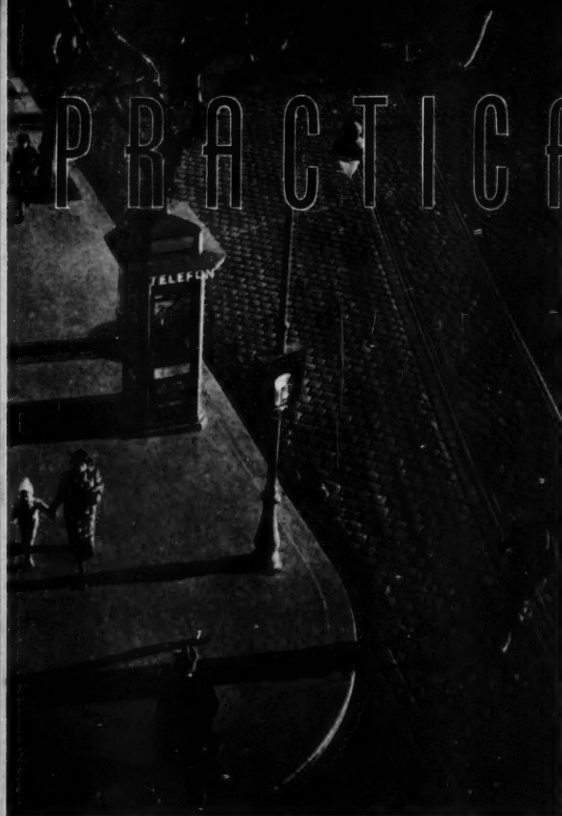
This quantity developing is very simple. As the prints are of a small size a number of them may be handled at the same time in an 8x10 tray. Slide one print into the tray, slide the second underneath it, and so on until the print on top of the pile is developed. Then begin to transfer the prints to the hypo solution. Using such a system will greatly speed up the procedure.



ACTUAL SIZE of enlargements. Upper print utilizes one-half of a standard 5x7-inch sheet of enlarging paper. Smaller print shows how the same negative may be masked down to one-quarter of a standard 5x7-inch sheet. A $\frac{1}{4}$ -inch white border is allowed.

No. 3, Normal grade, exposure for a medium negative is about 12 seconds at $f16$. Exposures will vary depending upon the line voltage as well as the density of the negative. To operate, make a test print on an average negative, exposing for 10 seconds. Development time for





PRACTICAL *Print*

What are the characteristics of a good print? How are they recognized? How regulated?

STREET SCENE calls for crisp, blue-black tones. Paper and print developer should be selected accordingly. Taken in Budapest, Hungary, 1/100th at f9. By László Osoha.

By E. W. LOWE*

SUCCESSFUL printing becomes simplified as soon as we understand the characteristics of a good print. This understanding enables us to visually "take a print apart," see its good and bad features, and then regulate them accordingly.

Contrast. The contrast of a print, like that of a negative, is the difference between the darkest tone and the lightest. If this difference is great, the print is said to be "contrasty" or "snappy." If the difference is not very great the print is "soft" or "flat."

In a negative, contrast is increased by increasing the developing time or decreased by shortening the time. In a print, however, contrast is built into the

paper emulsion by the manufacturer, and one picks a "hard" or a "soft" grade of paper according to the requirements of the picture. However, with any grade of paper, slightly increased contrast can be obtained by using a concentrated developer. Most print developers are made up as stock solutions that are diluted with more or less water, depending on the degree of contrast desired.

Density. Density in the print is controlled by exposure. If a print has been over-exposed, shortening the developing time results only in a muddy-looking picture with an off-color image. If a print is under-exposed, density can be allowed to build up to some extent by prolonged development. However, with too long a developing time, any developer (particu-

* Mr. Lowe is well-known for his research work with the Edwal Laboratories. This article is a condensation of one chapter of his new book, "Modern Developing Methods", soon to be released.

DEVELOPING

larly those containing metol) will produce yellow stains and sometimes fog on the print.

The best way to control density is to determine the correct exposure by means of one of the exposure-meters made for the purpose, or by making "test strips" on which different parts of the same paper are given different exposures.

Tone. The tone or color of the silver deposit in a print is very important. If the image is black with a slight bluish tinge, it is said to have a "cold" tone. If it has a brownish cast it is said to be warm-toned. Greenish or olive images are also called warm tones, especially if

there is some admixture of brown.

Each type of tone is good for some particular type of picture, though individual tastes differ quite widely. Warm tones are often desired in portraits and landscape pictures and cold bluish-blacks are wanted in commercial photographs.

Some papers produce colder tones than others. With any developer and any paper, a colder tone is produced by a long developing time and a warmer tone by a short developing time.

Classification of Papers. There are four general types of printing papers in common use. The *bromides* contain silver bromide as the light-sensitive agent

WARM TONES, attained by correct selection of paper and developer, bring out the richness of figure studies. Film: Portrait Pan, $\frac{1}{2}$ second at $\frac{1}{8}$. Paper Vitava Opal developed in D52. By H. A. von Behr. From International Salon of Royal Photographic Society shown in United States by the Oval-Table Society.



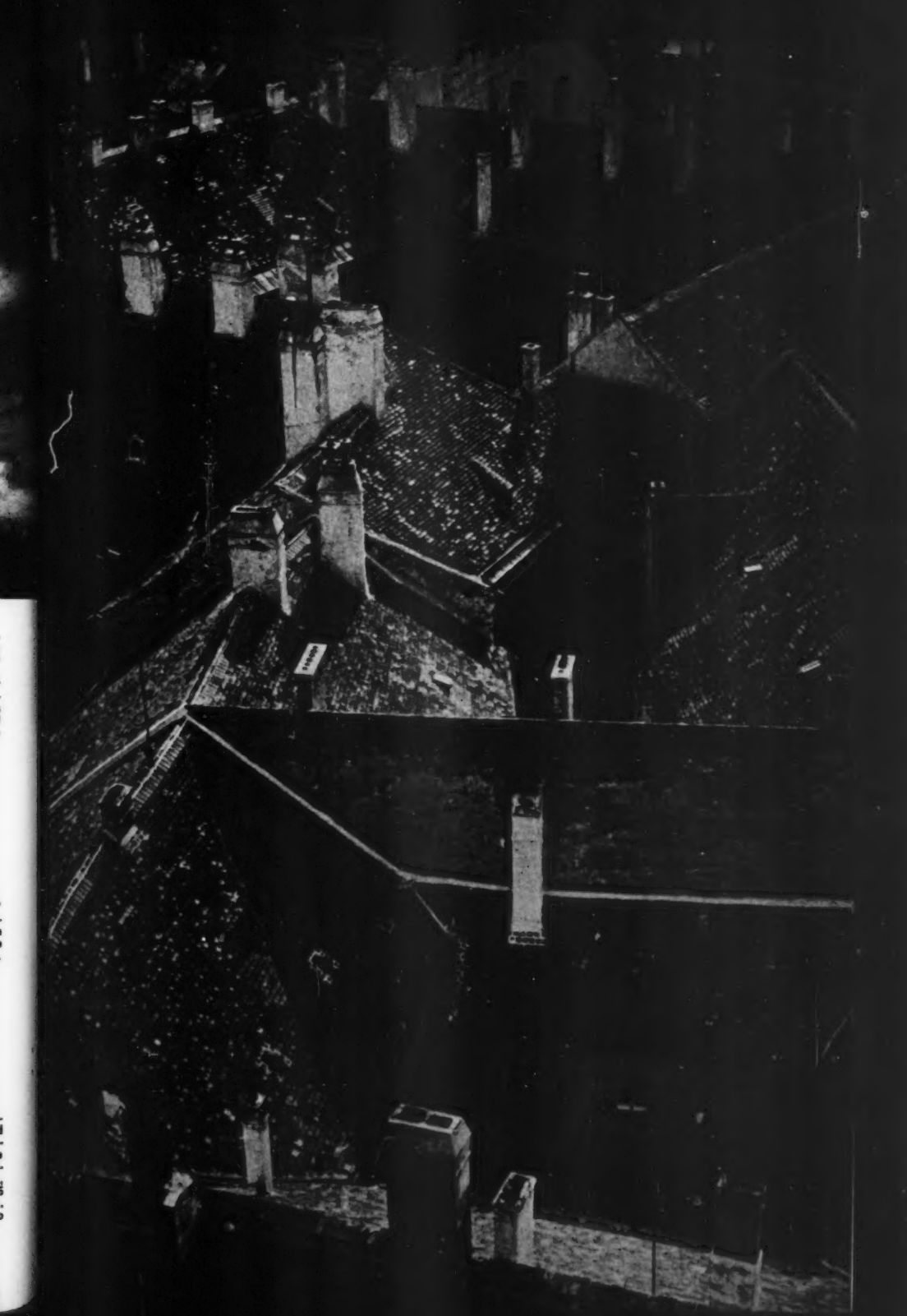


DENSITY in a print is controlled by exposure. The picture above was taken at $1/150$ th of a second, $f/5.6$, with a medium yellow filter for the sky effect. In printing, the enlargement was timed to give the desired tone of dark gray to the sky. By F. Berko.



"KNOT HOLE GANG" (left) is from a print developed to get maximum gradation and detail in the wood fence. By Erno Vadas.

"THE ROOFS OF BUDAPEST" (right) was printed on glossy paper for maximum crispness to reproduce the feeling of bright summer sunshine. Rolliflex, 6×6 cm., Zeiss Tessar $f/3.5$ lens, Perutz Perpanatic film, $1/50$ th second at $f/9$. No filter. By Laszlo Osoha.



and are used as fast enlarging papers. The *fast chlorobromides* require from two to four times as much exposure as the bromides, but are capable of recording fine detail more accurately. The *slow chlorobromide* papers and the *chloride* paper, Tuma Gas, require still longer exposure and are better than the fast chlorobromides for accurately rendering detail and delicate gradations. They can be used either for enlarging or for contact printing. As a group they tend to give warm tones. The fourth group, the chloride papers, are used exclusively for contact printing. With some brands, 4 or 5 grades of contrast are available. Examples of the four classes are:

Bromide (fast enlarging): Brovira, Charcoal Black, Haloid Press Bromide, Haloid Record, Kodabrom, Novacrom, P.M.C.

Fast Chlorobromide (enlarging): Artex Projection, Agfa Portrait Enlarging, Cykora, Projecto, Velour Black, Vitava Projection.

Slow Chlorobromide and Fast Chloride (enlarging and contact): Kodalure, Indiatone, Veltura, Vitava Opal, Tuma Gas.

Chloride (contact): Apex, Artura Iris, Agfa Professional papers, (Cyko, Crystal Stipple, etc.), Convira, Industro, Nomis, Novagas, Vitava Athena.

Practical Print Making. The actual making of a print is a very simple process. The steps are:

1. Expose the paper in an enlarger or contact printer.
2. Develop the picture.
3. Rinse in an acetic acid or citric acid stop bath.
4. Fix for 10 minutes.
5. Wash for an hour in running water.
6. Dry between blotters or on a ferrotype plate. Simple though this is, there are a few precautions that should be considered.

Test Strips. The use of test strips to determine the correct exposure in the enlarger or printer will save a good deal of paper. A test strip is made by making a series of exposures of increasing length on different parts of a strip of the same kind

of paper to be used in the picture. After the negative is in place and the enlarger focused, the strip of sensitized paper is partly covered with a cardboard and successive areas are given increasingly greater exposures by moving the card. As an example, the succeeding areas on the strip might have exposures of 10, 20, 30, 40, and 50 seconds respectively.

The strip is developed for at least 2 minutes in the same developer which will be used for later prints, rinsed and fixed. The exposure which gives the best density and detail on the test strip is used in making the print from that negative. After continuous practice, the photographer can judge exposure time quite accurately from looking at the projected image or the negative, or he can use an exposure meter. Even the test strips should be made when starting on a new batch of paper or an unfamiliar developer, because emulsions vary and different developers sometimes require different exposures.

Developing Time. Most enlarging papers will give muddy looking images if the print is developed less than a minute, and all enlarging papers give their deepest and richest black tones if development is carried on for 2 minutes or more. With metol developers the limit is about $3\frac{1}{2}$ minutes because stains appear after that. With Edwal-102 or 106 development can be carried on up to 5 or 6 minutes at 65° F. without staining. Contact printing papers usually are completely developed in $\frac{3}{4}$ to $1\frac{1}{2}$ minutes.

Developing Temperatures. All print developers work best at 65° to 70° F. A Monazol developer, Edwal-102, can be used up to 90° if necessary. All developers containing metol or amidol tend to produce yellow stains and to give blocked up shadow-areas if used above 75° F. This is the cause of many poor prints in hot weather, for though the developer may be at 70° F. when first made, it soon warms up to 75° or 80° F. or whatever the room temperature may be.

For development at 75° or above, Edwal Thermo Salts should be added (one

(Page 93, please)



"DREAMY ST. WOLFGANG" by Joseph M. Bing, F. R. P. S. From the 83rd Annual International Salon of the Royal Photographic Society shown in America under the auspices of the Oval Table Society.



NO texture screen is necessary when the subject, like this, is best presented as a straight print. Fig. 1

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Making enlargements or contact prints through a texture printing screen minimizes defects in negatives and imparts distinction and dramatic force.

By JACK POWELL

Illustrated by the Author

THE surface texture of a print may be the deciding factor which determines its success or failure.

Print texture should be differentiated from *paper surface*. The latter merely depends upon the texture of the paper surface—glossy, semi-matte, etc. A photograph finished on a rough matte paper loses some of its definition because of the “broken surface of the paper.” The extremely rough surfaces such as Tapestry and Defender Veltura “Q” break up the image to such an extent that hair line definition becomes impossible. Such papers are used only for types of pictorial work requiring a degree of softness. These differences in appearance are due to the paper stock and emulsion used by the manufacturer.

Print texture, on the other hand, is not derived from the paper but from the printing process used. A print produced by means of the bromoil process has a rich pigment finish. Paper negatives have an appearance similar to charcoal drawings or airbrush work. Carbons, carbros, gum prints, all have a characteristic appearance. These special effects are obtainable, however, by means of the use of various printing screens. A texture printing screen is a piece of film, a negative of a screen design. It is made by photographing a desired design or pattern. This design may consist of a tracery of cross hatched lines, or a motif repeated over and over again; perhaps a smooth, stippled effect, or a series of finely etched lines.

Texture screens are by no means new to



MIS-USE of a screen. The “Renaissance” type of printing screen should be used only with low key subjects suggestive, of strength, vigor or antiquity Fig. 2

photography. To my knowledge the first print on which a screen was used was made by Perchard from a hand worked matrix, and displayed in Germany in 1910. Its effect was somewhat similar to that of the present day Jack Powell Etching Screen, type “A”. In later years screens of various types began to appear in connection with salon exhibitions, creating a great deal of interest and comment. The screens referred to in this article are of my own manufacture, known as the Jack Powell Texture Screens.

Fig. 2 exemplifies the mis-use of a screen. A portrait of this type, simple and high in key obviously calls for a screen that will best retain these characteristics. A screen like the Bromoil texture or type “A” such as used in Fig. 3 and Fig 4 should have been employed. The Renaissance screen, by its very strength and vigor is incompatible with the subject and divests the picture of its innate delicacy. “Nerandra”, Fig. 1, is the same subject given the treatment best suited to it, a

S C R E E N S



straight print. The head was outlined only for purposes of reproduction.

Fig. 4, "The Torn Hat," was printed through the type "A" screen. This photograph was made according to the specifications noted earlier, that is, using frontal illumination with the camera and light placed at the same viewpoint. In addition, the background was lighted separately. This combination results in an effect that resembles a delicate etching.

Fig. 7, "Veronese Nobleman," illustrates the Renaissance screen and the type of subject matter best adapted to its use.

"Casita de las Lomas," Fig. 8, shows how a landscape may be made more pictorial by adding a paper negative texture.

The improvements which a screen bestows are well worth noting: First, a commonplace print can be greatly enriched. Very often a print which lacks a certain vigor, or aesthetic appeal, can be vastly enhanced through screen imprinting. Second, prints lacking in quality through faulty negative technique

also profit from screening. For instance, when the print is fuzzy, or badly blurred due to the negative's being out of focus, it will be found that the lines or pattern of the screen become interwoven with and serve to "tie in" the image, and so actually convey the appearance of sharpness.

Many miniature camera users consider screens a blessing, for they are extremely helpful in the matter of grain. The mesh of the screen completely annihilates grain by the simple process of breaking up grain clusters and filling in between them with fine lines. While grain is not the problem it used to be, there are in existence many negatives made in the early years of the miniature which, considered unprintable by present standards of quality, may yet be saved and considerably improved by printing with screens.

Of major importance is the relationship of texture pattern to sub-



AN OUT-OF-FOCUS or slightly fuzzy negative can be "sharpened" by printing through a texture screen. The upper reproduction is from a texture screen print. The smaller one is a straight print from the same negative. Despite the loss of detail necessarily caused by the magazine halftone printing process, the larger print still appears to be the sharper one—due to the texture screen used.

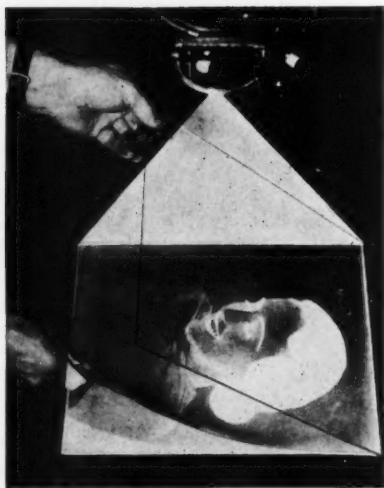
Fig. 3

ject matter. The screen used for general work is that with a linework similar to the short, free lines of an etching. This is known as the type "A" Etching texture.

This particular screen was made from an original, crow quill pen and ink etching on a highly glazed sheet of 30" by 40" white board. It required three months of

"THE TORN HAT." Example of the use of a Type A screen. This portrait was lighted according to the general specifications for use with texture printing screens. The main light was next to the camera and a second light illuminated the background Fig. 4





PRINTING with texture screens is the same as ordinary enlarging except that the exposure is made with the screen laid on the enlarging paper Fig. 5

tedious work to complete the web of lines. The finished etching was then transferred to a master positive, and from this positive the final working screens were made. The pattern of this screen consists of a network of cross-hatched lines and its effect is that of a hand-etched print. For eleven by fourteen inch prints, the lines are slightly heavier than the eight by ten or the five by seven sizes. In order to use the screen correctly and to derive its full benefit, it is important that screen and print sizes correspond.

The "Etching" type of screen is most expediently used with portraits of rather flat lighting (see Fig. 4). It also is well suited for scenic and architectural subjects. The heavy open work of the lines is made so that modeling of large heads will fit into the heavy texture. For smaller heads it is better to use a screen of finer mesh, such as the type "D" Tapestry pattern. In the near future an improved model of the above Etching texture screen will be released. This new screen is a reproduction of an original drypoint etching of a fine mesh and may be used for both small and large heads.

In order to obtain a true, etching-like effect in portraits, front lighting procedure

should be followed. The subject is illuminated with a direct frontal light, the camera placed next to the light. A negative from this set up will result in a delicately modeled image with crisp, brilliant highlights, pleasing halftones, and luminous shadows. When printed through the screen, the linework of the matrix will not print through the highlights, will print in portion through the middletones, while the full effect of the line texture will appear in the shadows. Where the shadows show but little picture detail, the screen will tend to break up those areas and bring to view any image that may be present.

Low key portraits also benefit from the use of the screen which often is used on strong, powerful studies with eminently successful results. Blocked up shadows spring to life as detail becomes visible in otherwise solid black areas. In addition, the lines of the etching screen *hold back* the lighter areas of the negative, thus allowing the detail present in those portions to appear to full advantage. The linework also lends a certain vibration to the print which serves to lend unity and substance.

The "Steel line" type of screen produces the effect of a fine, steel engraving. Because its line is a bit too long for portraits, it is more advantageously used with pictorial subjects.

The "Tapestry" pattern is one of the most popular screens in use. Its finely woven mesh imparts the appearance of a rich tapestry without in any way detracting from the actual photograph. This texture may be used for all photographs with equally pleasing results, and portraits, when posed against rich velvet or velour backgrounds look like old master paintings when printed through this screen.

The "Renaissance" is a new texture pattern which transforms an ordinary portrait into an "Old Master", mellowed with age and seamed with time-honored cracks. One must be especially selective in using this screen. It would hardly do to imprint the screen on a photograph of a steam roller or a skyscraper. Its mood

is that of antiquity, its effect weighty and sumptuous. Its worth is realized only when used with studies wherein the darker tones prevail and whose tempo is slow, with massiveness and gravity predominating.

The Bromoil type of texture reproduces the soft stipple effect of a carefully worked bromoil print, eliminating the necessity of going through the various steps of that process (see Fig. 6). I do not mean to in-

"PROFILE," illustrates the use of a Bromoil texture screen with a high key subject. Fig. 6





"VERONESE NOBLEMAN" illustrates the renaissance screen and the type of subject best adapted to its use. See Fig. 2 for an example of poor choice of subject matter for this type of screen Fig. 7

fer that the use of this particular screen will prove a substitute for the bromoil process, but it will produce the effect of a bromoil. The beautiful, soft texture obtained is comparable to the brush-worked

original. This screen adapts itself well to any type of photograph.

The Paper negative screen conveys the appearance of the paper grain characteristic of paper negatives. The finished ap-

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pearance of the print is that of a charcoal drawing combined with the quality of a full toned photograph. Blemishes are softened and sometimes entirely removed by printing through the Paper Negative screen.

The negative image is first projected onto a dummy sheet and controlled as to size, definition and composition. The enlarging lens is then stopped down to the desired aperture. A test strip is made, with the screen on the paper and the exposure made so that three minutes development will be required. The test strip, after fixing and a quick washing, is inspected under white light in order to ascertain the printed density of the screen and photographic image. This strip determines, as it does in ordinary projection, the correct exposure time.

Having decided on the correct exposure, one proceeds with the printing operation.

Two methods afford control. The first way is to lay the screen in contact with the printing paper, screen emulsion to paper emulsion. The negative image is then projected through the screen onto the sensitized paper for the *full* duration of the exposure.

In the second method, the screen is placed as above, but allowed to remain in contact with the paper for only a part of the full exposure necessary to secure a rich print.

A full exposure with the screen produces the full screen value on the print. A shorter screen exposure, that is, exposure with the screen in position for only a portion of the printing time, will produce a softer screen value, so that the screen's pattern will appear relatively indistinct.

The screen must always be placed in absolute contact with the paper to obtain

(Page 90, please)

"CASITA DE LAS LOMAS" shows how a landscape can be "pictorialized" by printing through the Paper Negative type of screen Fig. 8



LAND THE M



CASTING is an easily - photographed action because it can be repeated until the desired composition is obtained. Graflex, 1/25th second at f/11. By Warren Boyer.

Cast for "hard to get" pictures by transferring fishing instincts into camera technique.

By RAY OVINGTON

WHETHER angling for fish or pictures—or both—the trick is to anticipate exciting moments before they happen. Be on the lookout for interesting shots set in suitable surroundings. Use one or more angling companions as subjects to help you stage effective shots.

Note I say "stage." Do not "pose" these

shots. There is a big difference. Posed fishing pictures have a habit of being perfect—too good to be real.

Snap a fisherman rigging up his rod as he leaves the car. Be on the lookout for picturesque scenes where the fisherman plays a definite part, telling a story by his actions, whether it be casting, lighting a

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WITH A LENS

pipe, swatting flies or climbing an alder bush.

Be on your guard for the unexpected. Your friend might take a spill in the strong current or a big trout might rise to the bait. There! Just now, while reloading your camera, your pal gets a strike. The trout jumped high and you missed the shot. That's O. K. He'll jump again, for he wasn't hooked. You are ready now, for you know his approximate location. Move in as close as possible and keep your finger on the cable release with the shutter speed as high as it will go. If you muffed it again you still have a chance when the angler plays the fish to the surface.

Shoot from as low a position as possible, preferably from the water line. Fish appear to jump higher that way. Try always to anticipate the peak of the movement or all you'll get is the splash. Fire away. Time is short and this may be the only fish of the day. While the fish is still thrashing, move around so that angler and fish are the same distance from the camera. This will keep both in focus despite wide lens opening. Now you are shooting double action—the jumping fish and the angler joined by a shimmering rod held high. Secretly you pray that the fish will jump or the angler take a spill! Splash! Splash! What a picture!

The fish tires and the angler strips the line while reaching for his landing net. Outstretched arms, the rod in one hand, landing net in the other, both supported by a bent figure and all focused on the same vital point make a complete composition. Each movement now is important for your sequence. Shoot your pal lifting his prize from the net. Get that proud grin and the spots on the fish while he unhooks it. That shot is good from every angle. Now that he's got his meat, your angler will be

available for staging any type of shot you might have missed in your excitement. Shoot a closeup of him holding open the creel top, rod in hand, while gently lowering the speckled beauty into it.

A fresh killed trout is a good basis for a still life photo. Wouldn't that morsel look beautiful in a creel lined with ferns? At the same time you've a chance to photograph your friend's most prized possession, his fishing tackle, rod, reel, lure boxes and fly-bedecked hat. Set the scene near some wild flowers with the passing brook as a backdrop. Have your fish wet.

Leaving the stream, we embark with our fisherman on his favorite lake. Shoot

A FEROCIOUS FIGHTER is the Great Northern Pike. Occasionally he is extremely acrobatic, but generally fights deep as if camera shy. Taken at Sawbill Lake, Minn., this is an enlargement from a small part of a negative. Agfa Super Plenachrome film, 1/1000th at f4.5. By Clement Crouch.





SKY BACKGROUND and low viewpoint combine for dramatic silhouettes. When shooting against the light, wait until the sun is obscured by a cloud. Exposure 1/50th at f5.6.

By H. A. Roberts

him getting into the canoe with all his paraphernalia. Place him in the bow facing toward you. When he opens his tackle box your camera will see an array of the queerest looking creations you could ever imagine.

Take a few of his casts against a pleasant shore line backdrop, perhaps a view of the cabin or boat landing. Swing around and profile him against the sparkling sunblazed water, while he is reeling in. If he gets fouled in a backlash, catch him untangling it and don't miss the scowl on his face. When the fish strikes, swing the boat around for a good lighting and shoot the entire sequence of movement as before. Shoot standing up and also from way down low in the boat or from the water line. When the sun sets,

LAKE TROUT waiting for the frying pan. Note the convincing details of the water lapping the shore, the wet fish and the relatively tiny reel with which they were hauled in



keep an eye out for contrasty cloud effects and move your subject, now in a more dramatic profile right into those clouds.

Salt water angling photography employs somewhat the same general technique, but here the photographer must concentrate more directly on picture

makeup and subject interest as he is working practically without scenery. If you are in the same row boat with your subject, the intimate portrait is the thing. You obviously have more chances for variety if you are shooting from a nearby craft.

When on a launch or party boat, constantly change position while shooting a scene. Climb the mast, lie on the highest deck or shoot from the cabin door. Show your angler struggling hard. When you shoot the jumping fish be sure to include the angler in whole or in part, or perhaps just the curve of the rod.

Hang over the side when the boatman goes to gaff the prize. If, however, it is a small fish, catch it coming over the side with the angler who is responsible bagging it. Views of this sort can be taken from a dingey or other craft a little ways off from the stern of the boat. Shoot close enough to identify the name plate. Include a light-house or some land mark to identify the location of the fishing trip. Filter these sea shots, causing the bright objects such as sails, white hulls and flying birds, to stand out.

Angling photos, good ones, will afford many pleasant hours during the blizzardy cold months of the off season. They help you to live over again those pleasant hours astream while enjoying one of the best sports in the world.



GOIN' TROUT FISHIN'. Catch them in a wooded section with spots of sun coming through directly overhead. Graflex camera, 1/195th second at f/8. By Warren Boyer.



Build a Fabricated

D A R K R O O M

Use of standard wall board sizes and wood screws in construction makes for economy and movability.

By PAUL DARROW

Illustrated by the Author

A DARKROOM which can be taken apart and reassembled is a boon to the photographer who rents his home or apartment. Such a unit, complete and light-tight, can be constructed at small cost.

The first problem is size. The room should be as small and compact as possible. A darkroom four by six feet square and eight feet high is most practical. It will fit into almost any room without crowding. Second, four by eight and four by six feet are standard wallboard sizes. This eliminates waste of material and reduces sawing to a minimum.

The walls of the fabricated darkroom illustrated here are of Cellotex, the floor of tempered Masonite, and the ceiling of cheap compoboard. The floor and ceiling are standard four-by-six-foot pieces. The walls require five pieces of four-by-eight Cellotex. Two of these must be ripped into two-by-eight pieces. This can be done at the lumber yard.

The frame is composed of

two-by-three uprights and one-by-two cross pieces. The doorway is constructed of one-by-two-inch pieces. Details of construction are shown in the diagram. The two-by-three uprights are mitered at both ends. The cross pieces are set in flush with



CONSTRUCTION DETAILS of the darkroom. The frame is built of 2"x3" uprights and 1"x2" crosspieces. See detail for corner joints. The walls are of Cellotex, the floor of Masonite, the ceiling of compo-board, and the shelves of 1/2" plywood. The door fits into a "U"-shaped groove and is fitted with a light baffle.

the surface. This can be done by hand or it can be done at the lumber yard at a small charge. The joints are then fitted together, numbered and drilled for screws. The use of screws throughout is most important, not only because they give the frame greater rigidity, but because they permit the structure to be taken apart and reassembled any number of times without injuring the frame and wallboard surface.

After the pieces for the frame are cut and numbered, they are ready to be set up. The Masonite sheet is placed in position for the floor and the framework erected over it. This serves as a guide to keep the frame square. Next the walls are screwed onto the frame, using brass eyelets to keep the screw heads from cutting through the Cellotex. If the dark-room is to fit in a corner, the frame must be moved out until the back walls are in place and then slid back into position.

The door must be carefully constructed to make it light-tight. Light travels around an "L" shape but not around a "U". Simplest and most practical is a sliding door that fits in a "U"-shaped channel and slides on a ballbearing track. These tracks are made of sliding showcase and cabinet doors and most hardware stores carry them.

The problem of shelves was solved by having them cut from half-inch plywood at the lumber yard. These can be of any size to suit individual needs. The shelf for the enlarger and trays should be waist
(Page 90, please)



THE DOOR (top) fits in a "U"-shaped channel, making the room light-tight when it is closed. Note the baffle ventilator near the floor.

BRASS EYELETS (lower) are used to keep the screw heads from cutting through the Cellotex walls.

READY for work (left).



3-DIMENSION PHOTO-

Depth is the magic dimension that makes pictures spring into life. Use either a stereo camera or a stereo attachment for your regular camera

By W. C. OSTERBROCK

HUMAN beings have the most highly developed vision in the world. But when a man looks at a photograph, painting or drawing, he automatically limits himself to the optical ability of a lower animal—to that of a bird or a horse that sees with one eye at a time.

This monocular (one-eyed) vision makes animals poor judges of distance. Apart from the normal impression of distance derived from natural perspective, scenes appear without depth.

Man, blessed with two-eyed vision, sees with *both* eyes focused at the same time on each subject. Binocular vision blends two images into one.

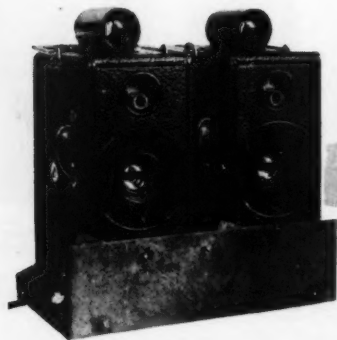
The camera, also, can be made to see stereoscopically. Human eyes are about $2\frac{1}{2}$ inches apart. Two cameras this distance apart can produce the same stereoscopic impression of depth and relief.

The stereogram (double photograph) is viewed through a pair of ordinary magnifying glasses, or a stereo viewer. The two pictures photographed from slightly different points of view merge into one and reproduce the third-dimensional quality of the original scene with uncanny realism and all its lifelike relief.

Stereograms are truly space photographs, the pictures of tomorrow. There are four general methods, any one of which may be used.

Successive exposures. Any camera can take stereo pictures of a still subject. After the first exposure, the camera is moved $2\frac{1}{2}$ inches (the normal distance between human eyes) and a second negative is made of the same subject. Prints are made by enlarging, if necessary, to $2\frac{1}{2}$ inches square and the stereo pair of prints is viewed in a stereoscope.

Several devices are on the market which can be attached to a tripod and which are arranged to furnish two possible locations



TWO Agfa Memo cameras mounted on a base-board make a satisfactory stereo unit when the shutter trips are linked so that a single cable release operates both simultaneously. Fig. 1.

GRAPHY

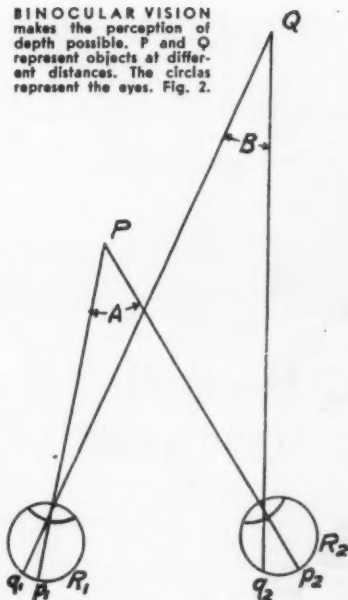
for the camera, with proper separation between them. It is entirely feasible, however, for any amateur to improvise a suitable stereo mounting for his own camera.

With this method of obtaining stereoscopic pictures there must be no motion in the field of view either during or between exposures. When a picture is viewed in a stereoscope an object which has moved out of view between the time the first and second exposures were made presents a ghostly appearance, as one eye can see entirely through it.

Simultaneous exposures, using two cameras. An improvement over the method of taking successive exposures consists in mounting two identical cameras with the correct separation between their lenses, and coupling the shutters so that they operate simultaneously. This is feasible only for small cameras. Cameras intended for such use must have lenses of exactly the same focal length, so that the two images will be of the same size. Fig 1 shows an assembly of this sort. It consists of two Agfa Memo cameras mounted on a common baseboard, with the shutter trips linked by two bell-cranks and piano-wire loops in such manner that a single cable-release operates both. If care is taken to synchronize the shutters carefully, it is quite feasible to use this outfit for snapshots involving motion.

Stereoscopic cameras. There are a number of stereo cameras available, ranging from the simple fixed-focus, box type to the reflex style with highest quality lens and shutter equipment. These cameras have matched lenses and synchronized shutters, and take the two pictures of a stereoscopic pair on a single negative. The negative is

BINOCULAR VISION makes the perception of depth possible. P and Q represent objects at different distances. The circles represent the eyes. Fig. 2.



This stereogram can be viewed through a pair of magnifying glasses or cut out and viewed in a stereo viewer.





Made by Herbert Dallinger with a 4x5 Series B Graflex.

Of Course, Mr. Dallinger Used a GRAFLEX

Most outstanding pictures are taken with Graflex-made cameras! For amateurs and professionals alike depend upon them for those hard-to-get shots that win prizes and recognition. Eventually you, too, like Mr. Dallinger, will own a Graflex American-made, Prize-Winning Camera. Why not make your selection now—at your Dealer's?



R. B. Series B GRAFLEX

Here's the camera that made the unusual "stopped action" picture shown above. This camera has full-vision ground glass focusing, focal plane shutter with a wide range of speeds and revolving back for either horizontal or vertical subjects. Yet it is popularly priced. Three sizes: $2\frac{1}{4} \times 3\frac{1}{4}$, $3\frac{1}{4} \times 4\frac{1}{4}$ and 4×5 .

$2\frac{1}{4} \times 3\frac{1}{4}$ Miniature SPEED GRAPHIC

Now equipped with a new tubular view finder that corrects for parallax and uses interchangeable lens matching masks, this Miniature Speed Graphic is more versatile than ever before. And it features built-in focal plane shutter flash synchronization for picture-taking day or night! Other Speed Graphic sizes: $3\frac{1}{4} \times 4\frac{1}{4}$, 4×5 and 5×7 .

While in New York for the World's Fair, visit the Graflex Display Rooms, 50 Rockefeller Plaza.

FREE! Send for FREE catalog of American-made, Prize-Winning Cameras and Accessories and FREE $2\frac{1}{4} \times 3\frac{1}{4}$ Miniature Speed Graphic folder. Paste coupon—or write your request—on penny post card, if you wish. Folmer Graflex Corporation, Dept. MC-19, Rochester, N. Y., U. S. A.

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Please send me your free catalog of Graflex and Speed Graphic American-made, Prize-Winning Cameras and Accessories and free $2\frac{1}{4} \times 3\frac{1}{4}$ Miniature Speed Graphic folder.

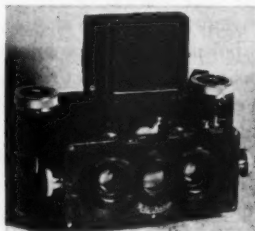
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AMERICAN MADE GRAFLEX Prize-Winning CAMERAS

either 6×13 centimeters (about $2\frac{3}{8} \times 5$ ") or 45×107 millimeters (about $1\frac{3}{4} \times 4$ ")—and comes in cut film or film pack, although several stereo cameras have recently appeared which use No. 120 roll film, giving five pair of exposures per roll.

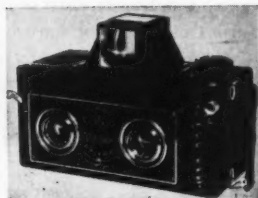
Although both views of a given subject are included on a single negative obtained in a stereo camera, they are not in proper relative position for stereoscopic viewing, and consequently the prints from the two halves must be transposed.

If paper prints are used, the two halves may be cut apart and transposed in mounting, but if positive transparencies on glass or film are desired, some form of transposing frame will be needed. This is a printing frame so arranged as to permit the printing of one frame at a time, and



THE ROLLEIDO-SCOP stereo camera (left). It does the work of two cameras arranged side by side.

THE ALTISCOP (right), an inexpensive stereo camera.



also to allow negative and positive to be shifted between the two exposures.

Stereoscopic attachments. Stereo negatives can also be made by using an attachment which adapts an ordinary, single-lens camera for stereo use. The Stereoly attachment for the Leica, and the Stereo-Tach which is adaptable to almost any miniature camera are examples of this type of device. The Leitz Stereoly attachment utilizes a system of prisms. The Stereo-Tach uses surface mirrors.

When using these devices, all problems

(Page 78, please)

HERE'S NEW PEACE-OF-MIND IN YOUR FLASH PICTURE-TAKING!



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This Safety Superflash was thrown full force against a stone wall. It did not burst, explode or shatter!

New Wabash Superflash Feature Checks Bursting and Shattering —without Holding Back Light!

Again Wabash steps forward! This time with Safety Superflash, World's safest flash bulb! Thanks to a double film wall both inside and outside of this super-safe bulb, the hazards of close-up flash picture-taking and of flash bulb handling are things of the past. Fully transparent . . . lens-clear, without a trace of discoloration . . . this sandwich of film gives you safety and protection without the least sacrifice of Superflash's powerful flash of light from its *all-hydronalium* wire element!

The New
WABASH
SAFETY
SUPERFLASH

Start taking better flash pictures with greater safety *now*. See your local photographic dealer. Or write directly to Wabash Photolamp Corp., 291 Carroll St., Brooklyn, N. Y.



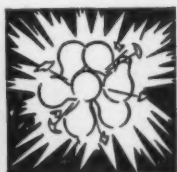
Patented blue "Safety Spot" gives visible check on safety-to-use of every Safety Superflash bulb before you buy and use it!



Only wire-filled flash bulb with the Safety Disc—Safety Superflash never gets too hot to unscrew by the neck.



The only flash bulb with the patented all-hydronalium wire flash element that makes flash shooting simple, sure!



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Sure to synchronise . . . sure to flash . . . Wabash Superflash is the standard bulb for built-in flash camera use.



CRITICAL

Your snapshots and how to improve them
In mailing prints, address to above department.

WHEN you choose an unusual angle for a picture be certain that your model's figure can stand the emphasis that will be placed on parts of her body. For this shot a girl with a slim waist curving into an interesting bust line and slim, well-modeled arms might carry the picture. The exposure should have been 1/25 at f16 instead of 1/100 at f8, for there is no movement and a sharper picture with greater depth of focus would have been more pleasing.

The black camera case swung across the model's shoulder is well placed, for it balances the dark tree formation of the opposite side of the picture.

In the original print the highlights seem to have a bleached out appearance. This may be the result of leaving the print in the Hypo for too long a period. Some enlarging papers seem to bleach out rapidly when left in the fixing bath. To test your paper leave a print in the hypo overnight. If it is nearly bleached the next morning, make it a rule to remove your enlargements immediately after fixation—twenty to thirty minutes, depending upon the freshness of the solution.

IN the snapshot of a statue called "Flight" the photographer almost lost his main point of interest in a maze of foliage. A slightly lower angle might have eliminated the trees or



"GIRL IN ACTION." Contax Camera, Super X film, f8, 1/100

placed them in a better position in relation to the statue.

Cropping, as shown by the dotted lines, will also obtain a better picture. To determine whether a print needs cropping or not, cut yourself two L-shaped pieces of cardboard, making one side of each 8" and the other 10" for prints up to 8x10 inches in size. Place these on the print joining or overlapping the ends, so that they serve as an adjustable frame which can be made larger or smaller and moved over the print at will. Play around with these until you have found the best possible picture and then crop your print.

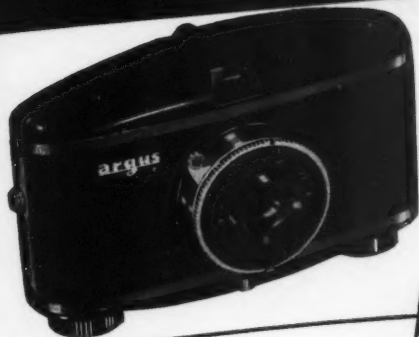
Silhouetting subjects against a bright, cloud-swept sky, achieved by using a dark yellow filter and slightly under-exposing, is effective. Its power, however, depends upon its dramatic quality which is achieved by well-balanced mass or unusual angle. A nearer view or a different angle might have added interest to this picture.



"FLIGHT." Robot camera, Perutz Persenno film, dark yellow filter, f16, 1/50th second

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318 Fourth St., Ann Arbor, Michigan**

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Address _____

Success Story of a C A M E R A C L U B

By **STANLEY RAYFIELD**

Photographs by John Hugelmeyer

FOUNDED six years ago, The Miniature Camera Club of New York is Manhattan's largest club devoted exclusively to minicam users. Its clubrooms are in The Midston House—(22 East 38th) in the heart of Manhattan. The club has been singularly successful in its effort to—as its Constitution puts it—"further and advance the science and art of miniature camera photography and its application, and to facilitate the exchange of information and ideas on this subject."

Three darkrooms adjoin the clubrooms, two equipped with enlargers and one with a full range of developing and fixing solutions. Members need supply only their own printing paper. The comfortable atmosphere of the clubroom invites discussions among members on anything from the latest fine-grain soup, or gadget, to the high price of cameras or the stock market. For the studios there are the latest issues of the leading American and foreign photographic magazines.

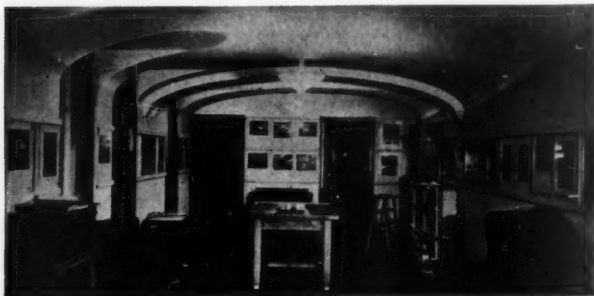
Members gather in groups on Monday evenings, awaiting the signal to go downstairs to the auditorium where the weekly lecture or discussion is held. The lecture



A NEW one-man show is hung each month in the Mezzanine Gallery which is open to the public. Fig. 1

room accommodates many more than the 170 odd members and, except during July and August, there is something going on every Monday night of the year. The club has its own screens, spot lights, and projection apparatus for illustrated lectures and the showing of salon prints. Topics for discussion are varied and few names among the photographically great are missing from the yearly roster of speakers.

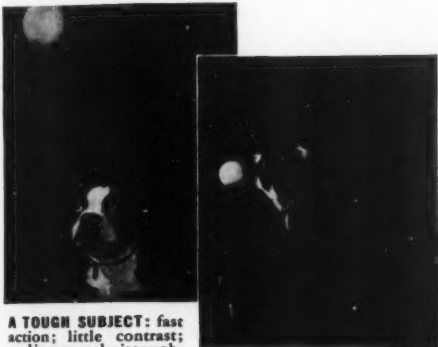
Immediately across from the auditorium is the Mezzanine Gallery,



A GROUP of members' prints is always on exhibition in the clubroom. The adjoining darkrooms are fully equipped for developing, printing, and enlarging. Fig. 2

ACTION *stopped by* **new G-E Flash**

1/1000 and new G-E Focal-Plane Photoflash Lamp catches black dog against black background



A TOUGH SUBJECT: fast action; little contrast; and just to make it tougher, slow fine-grain film.

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If you haven't, you may be missing better synchro-flash shots. A new G-E flash "peak" for every picture need: for high speed action, with focal plane shutters, new G-E Focal Plane No. 30 and 31; for general use, new G-E Synchro-Press No. 16, 7, 11; for extra covering power, new G-E Synchro-Press No. 21... the flash with that extra punch of light.

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open to the public daily from 10 a. m. to 10 p. m., where each month throughout the year is hung a fifty-print, one-man show of genuine distinction. Outside attendance is very large and interest is constantly stimulated by the cooperative New York newspapers. This publicity plays an important part in the club's success.

The club is managed by a group of elected officers and an Executive Board which meets once a month, when suggestions are made for the club's improvement. From members' ideas and wishes have sprung many a group interest, such as courses in table top photography, portraiture, and the beginners, intermediate, and advanced classes. There are several committees, each responsible for a separate club activity and required to make a regular report to the Board. The committees are:

Pictorial—responsible for furthering members' knowledge of and interest in this branch of photography.

Publication—reporting the club's activities to the magazines and New York newspapers. Also prints monthly bulletins.

Program—provides top notch speakers for the weekly meetings.

Technical—keeps the technical group on its toes and abreast of new processes.

Membership—investigates the acceptability of new members.

House—looks after the physical upkeep of the clubrooms and darkrooms.

Print Director—responsible for procuring a steady supply of prints for the clubroom and outstanding shows for the Mezzanine Gallery.

An example of the breadth of the club's activities is the invitation now being extended to the members of the Photographic Society of America to visit the Miniature Camera Club of New York during their World's Fair Convention.

Arrangements have been made for P.S.A. members to have full access to the club's facilities during their New York stay. With the World's Fair right at its

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Bass Bargaingram

Vol. 29. No. 9

SEPTEMBER, 1939

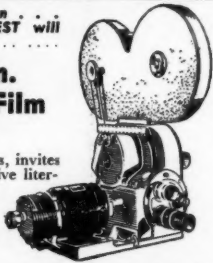
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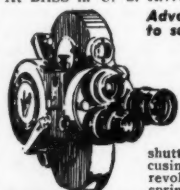
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doorstep and photographic possibilities unlimited, the club is making its dark-rooms available for handling those masterpieces that will not wait—the salon prints of the World of Tomorrow.

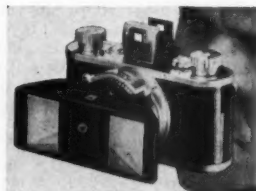
3-Dimension Photography

(Continued from page 70)

of matched lenses and synchronized shutters are removed. Furthermore, transposition of prints is no longer required, since the angles of reflection in the mirror or prism systems are so chosen that the images cross in going through the lens. This means that an enlargement of the frame (or a contact print in the case of the larger cameras) may be used directly in the stereoscope, and thus stereoscopic photography becomes available to the thousands of camera fans who entrust their developing and printing to the commercial photo-finisher.

Any of these methods may be used to produce stereoscopic pictures in full color. If two separate color transparencies are employed they must be mounted very accurately—and this is a tedious job. Here the use of the Stereoly or the Stereo-Tach has a decided advantage, since the two images appear on a single frame in proper positions.

Photographic technique. Prints for stereo viewing should have a wide range of gradation, without excessive contrast or wide expanses of blank highlights. Posi-



3-DIMENSION pictures can be taken with an ordinary camera if an attachment is placed in front of the lens to "see double."

ATTACHMENTS to make two exposures on each frame of film. The Stereotach (above) for 35 mm. cameras. The Leitz Stereoly attachment (right) is for the Leica.



tive transparencies are usually more effective than paper prints because of the greater amount of silver in the emulsion of the former and because the range of visual densities is reduced by the light reflected from even the blackest portions of a paper print. It is particularly convenient to prepare prints on 35mm. positive film, in which case a group of twenty-five or thirty prints may be made on a single length and viewed in succession by advancing the film strip frame in the viewer.

In observing an object or a scene, one's eyes are continually ranging back and forth, noticing various details. In this process the lenses of the eyes are constantly changing in focal length, by virtue of the power of accommodation, so that every portion of the object upon which the attention is fixed is seen sharply. In order to produce a natural effect in stereo pictures the entire print must exhibit good definition. A reasonably small aperture will provide the necessary depth of focus.

Viewing. An old-fashioned stereoscope can be used for viewing paper prints. Place a suitable piece of cardboard into the holder and set the prints side by side upon the cardboard. Looking through the instrument, shift them until the images merge. Transparencies can be viewed through one of the viewers now on the market. In each case the pictures are visually "fused," producing the third dimension effect.

Principles of stereoscopic vision. The manner in which binocular vision en-



STEREO VIEWERS use prints either 45x107mm. (about 1 7/8 by 4 inches), or 4x13 cm. (about 2 3/8 by 5 inches). Illustrated above is a folding stereoscope of the R. J. Fitzsimons Corp.

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Maximar B, 9x12cm., Carl Zeiss Tessar F4.5.....	54.50
Maximar A, 8 1/4 x 9cm., Carl Zeiss Tessar F4.5.....	47.50
Zeiss Super Ikonta B, latest model, Zeiss Tessar F2.8.....	97.50
Contax III, Sonnar F1.5, eveready case.....	174.50
Contax III, Sonnar F2.0, eveready case.....	159.50
Contax II, Sonnar F2.0, eveready case.....	134.50
Contax I, Zeiss Tessar F2.8.....	69.50
Robot I, Zeiss Tessar F2.8.....	74.50
Robot II, Zeiss Biotar F2.0.....	137.50
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Speed Graphic 2 1/4 x 3 1/4, Zeiss Tessar F4.5.....	89.50
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ables us to form an impression of the depth of an object is shown in Fig. 2. R_1 and R_2 represent the retinas of the left and right eyes with the attention of the observer fixed upon point P. The axes of the two eyes then intersect at point P, and there is a certain angle A between them. If attention is directed upon point Q, this angle will change to B, which is a smaller angle than A because of the greater distance from the observer to Q as compared with P. The amount of muscular control required to produce these various degrees of convergence of the axes of the eyes serves to give us an estimation of the distances from our eyes to the various objects such as P and Q.

There is another effect, however, which is far more important in determining the comparative or relative distances, and therefore the dimensions of an object in the direction of the line of sight. In Fig. 2 the image of P is formed at p_1 on the left retina, and at p_2 on the right retina, while corresponding images of Q occur

at q_1 and q_2 . The distance between p_1 and q_1 is different from the distance between p_2 and q_2 , whereas if P and Q had been equally distant from the observer these two intervals would have been the same. Corresponding points on the two retinas are apparently associated with each other in the optic nerve system, and the difference between the lengths p_1q_1 and p_2q_2 is translated by the brain into a measure of the actual distance between P and Q.

Thus the two eyes receive distinctly different impressions of a given scene. If we wish to reproduce this effect photographically, it is necessary for us to provide two separate pictures, one being a record of the scene as observed by the left eye and the other a record as seen by the right eye. In viewing the resultant pair of pictures, we must arrange for each eye to see only the image intended for it. This is accomplished by means of a stereoscope which brings the stereograms to life with a vividness, depth and uncanny reality.

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Fits Practically All Standard 4"x5" Developing Tanks!

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How to Equip Your Darkroom

(Continued from page 44)

SECONDARY SHOPPING LIST

(Items which may be added to the beginner's list.)

FOR DEVELOPING NEGATIVES

Film dryer
Agitator for the tank
Scales for weighing chemicals
Measuring spoons
Chemicals for a tank developer of choice
Filter paper
Negative envelopes
File for negatives

FOR ENLARGING

Foot switch for enlarger
Enlarging exposure meter
Print washer

TO MAKE MATTE PRINTS

Blotter roll for drying or print dryer

TO MAKE GLOSSY PRINTS

Chromium ferrotyping plates or electric ferrotyping machine
Waxing solution
Squeegee or squeegee roller
Glossy paper, soft, medium and hard

\$\$\$ in Real Estate

(Continued from page 45)

telephone directory, and copy in a small notebook the names and addresses of all the real estate agencies in town.

2. Figure the lowest price that you can profitably charge for a single photograph, including allowance for the cost of film, developing, transportation (car-fare or gasoline), and your time.

Your price should be as low as possible, because you will do business in quantity. Your price per picture should be less than that charged by the commercial studios for the same type of work. Otherwise, the average real estate firm would find it pointless to deal with you in preference to an established company. Check the rates charged by professional photographers by calling them and inquiring.

3. When you have decided on a price sufficient to net a satisfactory profit per snapshot, call on each of the real estate firms on your list with your proposition.

4. Ask the manager if he is interested

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CO. CHICAGO, U. S. A.

in having attractive pictures made of his listings. Explain how much time and money he can save by showing pictures to his prospects instead of driving them all over town, wasting time and gas.

5. If you are told that the firm has such photographs, ask to see some of them. Some firms have pictures snapped by one of their salesmen. The chances are ten to one that they are not good pictures and that you can do a better job. After all, it is important for the picture of a house for sale to be as attractive as possible!

Jot down the address of one of the houses shown you and go out and make the best possible picture of it. Show your photograph to the manager and let him compare the pictures. The contrast will often be great enough to convince the manager that he needs a photographer.

6. It is not necessary to limit your services to one firm, unless the latter gives you enough orders to keep you busy full time.

7. Additional business can be secured by suggesting that a photograph be taken not

only of the house for sale, but also of the street in which it is located, so that the prospect can get a more complete idea of the home and its immediate neighborhood. A third picture might be taken of the nearest shopping center, showing the stores.

8. Apartment buildings and interior views of some of the rooms should also be photographed.

9. Keep prints of all of the work done to use in soliciting new business.

There is another business angle to consider in real estate photography. The average man who buys a house, an apartment building, or other property, is greatly enthused about it, and is anxious to show it to his friends and relatives. A photograph is a happy solution to the problem of showing it to out-of-town people.

Every real estate buyer is a prospect for a photograph, or several of them showing different views of his property. To secure business from this source, follow the following procedure:

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1. Ask the real estate firm with whom you are doing business for a weekly list of their sales. Call or telephone each of these buyers and ask if he would like pictures of his purchase to send to out-of-town friends.

2. Obtain additional names and addresses from other real estate agencies. Simply explain that it is good advertising for them to have attractive pictures of their houses sent all over the country. If necessary, agree to have a small rubber stamp made with their name on it, to be stamped on the back of each picture of one of their sales.

3. Tour the new real estate developments in your community, note the addresses and get in touch with the buyer or builder who will be a good prospect. New stores are also first-rate prospects.

Building contractors who put up new houses and apartment buildings also need pictures of them to show prospective customers. To secure this type of business follow the procedure used to obtain business from real estate agencies. Consult the classified telephone book, listing the building contractors, and call on them with your proposition.

Another money-making avenue is open to you if you are good at taking indoor pictures under artificial lighting. Electrical contractors who do lighting jobs for restaurants, theatres, stores, hotels, etc. are anxious to get good photographs of their installations to show prospective customers.

The Camera UNDERWATER

(Continued from page 33)

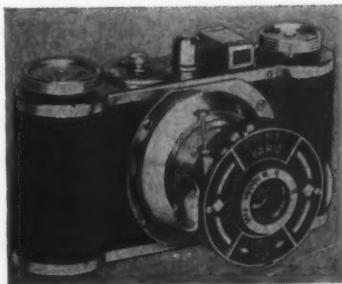
photographed as though they were only two-thirds of the distance away. After this discovery this effect was easily compensated for by moving the model half again as far as she was originally.

Split frame shots, pictures made with the camera lens half above and half below the surface of the water, show clearly the effects of refraction. Note the small head and arms of the swimmer in Fig. 7 and the large body. The effect of the water is especially clear in Fig. 8 where

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SALONS TO ENTER

Closing Date	Name of Salon	Number of Prints and Entry Fee	For Entry Blank, Write to
September 16	Second Annual International Exhibition of Photography	Fee: 2/6 for every four entries; color transparencies and prints	A. W. Woods, 258, Twickenham Road, Isleworth, Middlesex, England
September 18	Atlanta National Amateur Salon	4 \$1.00	C. S. Minglehoff, 252 Peachtree St., N. W., Atlanta, Georgia
October 2	New York Salon of Photography	4 \$1.00	Salon Committee, The Camera Club, 121 West 68th Street, New York City
October 3	Lens Artists' First Annual Photography Salon	Any number of prints may be submitted, 25 cents each; \$1.00 minimum	Lens Artists' First Annual Photography Salon, Chancellor Hotel, 221 7th St., Parkersburg, West Va.
October 15	Fourth Annual 100-Print Travel Salon	4 \$1.00	Metropolitan Camera Club Council, Inc., 106 West 13th St., New York City
October 16	Fifth Annual National Philadelphia Salon of the Miniature Camera	4 \$1.00	Charles Heller, Salon Chairman, Architects Building, 17th and Sansom Sts., Philadelphia, Pa.
October 30	Second Annual International Exhibition of Photography	1 or 2 prints, 3/—; 3 or 4 prints, 3/6. Lantern slides, 3d. per slide (minimum 1/—)	The Hon. Exhibition Secretary, International Exhibition of Photography, c/o The Technical College, Hincley, Leicestershire, England
November 13	First National Amateur Photographic Salon	4 \$.50	Dr. Frederick C. Gruber, Director of the Cultural Olympics, 3446 Walnut Street, Philadelphia, Pa.

the swimming instructor's torso seems to have been moved half across his legs. To make these two shots, the 35 foot launch at Silver Springs was hoisted halfway out of the water by means of a crane, so that the water line came to the middle of the

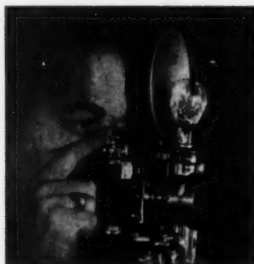
lens.

For split frame pictures, calm water and a fairly shallow place with a sandy bottom is best. The sand acts as a reflector and nearly equalizes the light above and below the surface of the water.

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GUARANTEE
OF
SATISFACTION

**A GENUINE
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TESTED PRODUCT**

Modern FILM for Your Camera

(Continued from page 41)

ble to the finest available as recently as a year or so ago, while the top speed films have gained their plus margin at no increase in grain size over previous fast films.

We should determine what possible conditions can have any bearing on film choice. These we might list about as follows:

1. The color of the light source. Sunlight has a lot of blue; artificial light has much red.
2. The intensity of the light. Since the fastest films sacrifice grain and latitude it is obviously better to use a slower speed when light and intensity permits, either indoors or out.
3. Movement in the subject. Moving objects require faster shutter speeds, therefore faster films.
4. The colors of the subject. Some subjects, as plant studies, will dictate a particular film type having the necessary color balance.
5. Special filter effects. It is sometimes desired to upset color balance for the sake of special effect or to bring out the difference between two colors of the same relative intensity.

That seems to cover the ground. First, there is the matter of light, whether artificial or sunlight. So long as the problem is not complicated by other considerations, the ortho is the choice for outdoors in good light. Here high resolving power and latitude are important while speed and red sensitivity are seldom needed. Good color balance outdoors can be achieved by means of a yellow filter. Excellent films of this type are Agfa's Plenachrome, F. G. Plenachrome, Eastman's Verichrome or Gevaert Superchrome. Faster than these is Agfa Super Plenachrome.

Working indoors by flood or flashlight, the red content of the light dictates the choice of a pan film. If the light is adequate or with subjects such as still lifes, table tops or other inanimate groupings, use the slowest of the pans for the sake

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<input type="checkbox"/> Kodak Retina I f:3.5 Compur Rapid.....	48.50
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<input type="checkbox"/> Kodak Bantam Special f:2, Ektar Compur Rapid, rangefinder, complete with field case.....	87.50
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<input type="checkbox"/> Kodak "35" f:5.6 Anastigmat.....	14.50
field case.....	6.50
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<input type="checkbox"/> National Graflex f:3.5 B & L Tessar.....	87.50
<input type="checkbox"/> Porflex "44" f:3.5 Coupled rangefinder.....	37.50
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<input type="checkbox"/> See Ray Miniature, 2 condensers, f:3.5, Wollensak lens. Takes up to 1 1/2 V. P. size.....	32.50
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of their fine grain and better all-around color balance. After all, a china doll won't mind posing a bit longer. Too, such subjects generally require considerable enlarging and you can't do that with a coarse-grain top-speed film. You have a wide film choice here—Agfa Finopan, Eastman Panatomic-X, Gevaert Panchromosa Micrograin and others.

Portrait subjects are best handled with somewhat faster films for indoors such as Agfa Superpan Supreme, DuPont F. G. ParPan or Eastman Plus-X.

Thus far we have been assuming good light, by no means always available. When sunlight is weak, as in the late fall or winter, or very early or late in the day, the ortho film will not deliver as well as the pans. Indoors under poor light conditions you will have to use the moderate-speed pans with still subjects and even possibly the highest speed films, depending on how limited the light is.

Moving subjects generally require the fastest films, though when working outdoors in excellent light it is sometimes possible to get by with one of the moderate-speed films. Indoors with moving subjects always pick the fastest films you can get.

When we consider the colors of the subject and various filtering problems we shift our attention from speed to color balance. Varicolored subjects are nine times out of ten best handled with a moderate-speed pan like Superpan Supreme or Plus-X without a filter. Consult the color balance tables, Chart II, and you won't go astray. However, some subjects contain colors which, if left to themselves, will reproduce as identical shades of gray. In such cases, selective filtering is necessary, selective because you are filtering for one or two special colors rather than for general correction. The colors of the subject will determine the filter to be used. The easiest method of selective filtering is to decide which color shall be shown light and then use a filter of that color. Remember that a filter passes light of its

own color and absorbs light that is complementary to its color.

In the chart on page 38, the more commonly used film brands for amateur work have been classified on the basis of broad type divisions. It should be remembered that such division cannot be accepted too literally since some films fall between rather than into the divisions.

Many amateurs purchase their film in bulk lots as 25, 50 or 100 foot lengths in the 35 mm. size. This has the advantage of assuring uniform results without the variations that might be introduced in the manufacture of different emulsion numbers, but it also introduces comparable hazards. Film ages and deteriorates particularly when poorly stored, moisture affects it, while the addition of dust spots from loose packing will certainly do it not a bit of good. On the whole it is better to spend a bit more and buy film as needed, particularly so since the presence of a large lot leads to the temptation of making that film a universal one, including tasks for which it is basically unsuited.

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For the same reason, 18 exposure lengths are to be preferred to the 36-frame units.

It's a good idea to have your films developed as soon after exposure as possible. Another good tip, when working under extreme conditions of temperature, is to give your film a chance to become accustomed to the temperature before it is loaded in the camera. Films taken from a cold place to a hot one will collect moisture if exposed too soon thereafter, while change from heat to extreme cold will make the film crack. Above all, be careful to load and unload your film in shade or subdued light.

Baumann and his Kodachrome Technique

(Continued from page 28)

halation emulsion in his enlarging easel and made a new negative. For enlarging he used an Elmar 50 mm. f3.5 lens with a light yellow filter for portraits, and a medium yellow filter for outdoor scenes. Kodachrome is practically grainless, so this bogey need not worry you when you make your new negative for black-and-white pictures.

Anton Baumann found experimenting with color so fascinating that he neglected black and white almost entirely. In color, he liked and made simple pictures—he disliked fancy, tricked-up subjects, and thought it no compliment if people said his pictures looked like paintings.

Baumann's photographic career began with an ancient box camera. Then he graduated to an 8 x 10 view camera. After the World War he was apprenticed as a mechanic at E. Leitz Co. He was promoted to a draughtsman's job and then transferred to the staff for designing optical instruments. Baumann owed his feeling for technical detail to this early training.

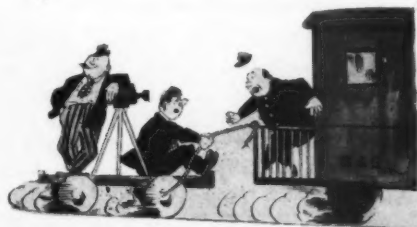
His opportunity came when the late Oskar Barnach marketed the first model of the Leica. Together they shot pictures for the catalogue and then Baumann began missionary work for the camera by lecturing and giving demonstrations

throughout Europe. As miniature camera technique improved by leaps and bounds, Baumann was given an opportunity to demonstrate the commercial possibilities of the camera. In 1937 he came to the United States, where his helpful lectures and interest in amateur photographers made him one of the most popular figures in the camera world.

Versatility was the keynote of Anton Baumann's success. He tackled new branches of picture-making enthusiastically, achieving efficiency in all of them. He was equally expert in picturing a landscape or a spider's leg.

Especially fond of open-air portraiture, he used his models in their natural habitats, snapping them against the sky with the sunshine for a photoflood, and a white reflector. He loved to portray picturesque native types—American Indians, Hungarians, Norwegians, and the colorful tribes of the Caucasus. He felt that city dwellers often had a sameness of facial expression that made them less photogenic and dynamic than peasant faces.

"Indian Drummer," reproduced in full color on the inside front cover is one of Anton Baumann's Indian studies which won him the admiration and love of the Indians themselves. It was made with a Leica camera using Kodachrome regular film. The exposure was $f/9$, $1/40$ th second.



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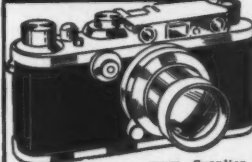


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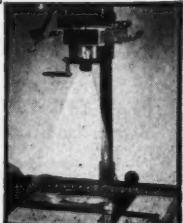
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It is no longer necessary to use your developing tray... amazing new LEROVISUAL paper developer now permits you to watch the picture come to life under the enlarger.

Get the tone values you want the first time... Correct over or under-exposure... Dodge and shade while you enlarge... Save wasted sheets of paper... Economical, long-lasting, mix LEROVISUAL, dip paper into it, and then place under enlarger.

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Made in U. S. A. Building, New York City

Build a Fabricated Darkroom

(Continued from page 67)

high. A shelf under the enlarger holds packs of enlarging paper. Kept here, the paper doesn't clutter up the shelf space by the enlarger and is out of the direct light. One or two narrow shelves above the main shelf hold chemicals, graduates, etc. The wiring depends entirely on the number of electrical gadgets used, but enough wall plugs are important.

MATERIALS REQUIRED

- One 4' x 6' piece compoboard.
- One 4' x 6' piece Masonite.
- Five 4' x 8' pieces Cellotex.
- Half-inch plywood, enough for shelves desired.
- Forty-eight feet 2" x 3" lumber.
- Fifty-eight feet 1" x 2" lumber.
- Screws and brass eyelets.

For ventilation, two light baffle ventilators (from Eastman Kodak Company) can be set into the Cellotex—one at the floor level and one at the top of the wall over the enlarger. A small electric fan blows out the hot air at the top. As running water is out of the question in a movable darkroom, it is wise to set up the darkroom near a bathroom.

Printing Screens

(Continued from page 61)

sharp delineation of its pattern. Because of this necessity for contact, the usual enlarging easel is not used. Instead, a printing frame fitted with a sheet of clear glass should be utilized. Where it is desired to use the screen for the full exposure's duration, the screen is placed in the frame next to the glass, then the paper is put over the screen, and the back section of the printing frame clamped into place. The frame is then placed under the enlarger and the exposure given.

When a partial screen printing is called for the printing frame is dispensed with. The paper is laid on a flat surface. Over this, the screen is placed and the two then

flattened down with a sheet of glass. The partial exposure is made, the red safety filter dropped into position (or the enlarger light turned off), the sheet of glass is gently lifted off and the screen carefully removed. Caution must be observed during this procedure lest the paper is disturbed or in any way moved from its position. After the screen is removed the sheet of glass is replaced over the paper in order to keep it flat, and the balance of the exposure given. The screen may be used in contact printing also, and here, as in enlarging, the screen is placed between the light source and the paper. Place the screen directly over the glass of the contact printer, secure the sheet of paper into position, and then make the contact. The dull or emulsion side of the screen should be next to the emulsion side of the negative.

It is important that screens be handled carefully. Keep them clean, and free from fingerprints. Hold them along the edges only, for heavy fingermarks, abrasions or scratches are apt to print through onto the paper.

Different paper surfaces produce varying degrees of sharpness or softness in screen lines. The smoother papers show the pattern clearly and distinctly, while rough papers give a softer deliniation. Bearing this in mind the user of screens is able to control his effect as he pleases.

A screened print may be worked on, if deemed necessary, without showing the work in any noticeable degree. This simple operation is performed after the print has been thoroughly washed, dried, and flattened, with a sharp-edged etching tool or razor blade. Dark blotches, scratches or any other imperfections present are lightly etched out, and by the same method highlights may be intensified or broadened. Lighter areas on the print may be toned down with spotting pencils. It will be found, on the whole that the usual scratches and black or white spots present in prints have been so interwoven with the texture of the screen as to be scarcely discernible.

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THE

Jack Powell

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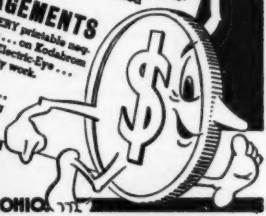
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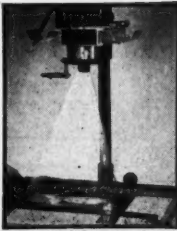
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Build a Fabricated Darkroom

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SEE THESE PHOTO EXHIBITS THIS MONTH

City	Street Address	Dates Open	Name of Exhibition
Casper, Wyo.	Federal Art Gallery	Sept. 11 to 23	Second Annual All Wyoming Salon
Chicago, Ill.	Chicago Camera Co. 2322 S. Michigan Ave.	Sept. 25 to Oct. 1	Zeiss Ikon Loan Exhibition
Chicago, Ill.	Wells-Smith Radio Corp., 71 E. Adams St.	Sept. 1 to 9 and 25 to 30	Zeiss Ikon Loan Exhibition
Cincinnati, O.	H. & S. Pogue Co. 4th and Race Sts.	Sept. 4 to 16	Zeiss Ikon Loan Exhibition
Cleveland Heights	Camera Craft 2446 Fairmount Blvd.	Sept. 11 to 30	Zeiss Ikon Loan Exhibition
Detroit, Mich.	Metropolitan Motion Picture Co., 121 Fisher Bldg.	Sept. 25 to Oct. 1	Zeiss Ikon Loan Exhibition
Hollywood, Cal.	Morgan Camera Shop 6262 Sunset Blvd.	Sept. 4 to 23	Zeiss Ikon Loan Exhibition
Los Angeles	Gourley Film Laboratories, 7106 South Broadway	Sept. 4 to 23	Zeiss Ikon Loan Exhibition
Los Angeles	Los Angeles Camera Ex- change, 1037 S. Olive St.	Sept. 4 to 23	Zeiss Ikon Loan Exhibition
Miami, Fla.	Tropical Camera Stores 123 Second St., N. E.	Sept. 4 to 16	Zeiss Ikon Loan Exhibition
Minneapolis, Minn.	Northern Photo Supply Co. 521 Second Ave., So.	Sept. 1 to 30	Zeiss Ikon Loan Exhibition
New York City	Aremac Camera Co. 1 East 43rd St.	Sept. 1 to 30	Zeiss Ikon Loan Exhibition
New York City	Foto-Art, Inc. 49 Vanderbilt Ave.	Sept. 4 to 30	Zeiss Ikon Loan Exhibition
New York City	H. Mielke, Inc. 242 East 86th St.	Sept. 1 to 30	Zeiss Ikon Loan Exhibition
New York City	Manhattan Camera Club, 310 Riverside Drive	Sept. 18, 8:30 P. M.	Travelling Salon of Bird Camera Club
Philadelphia	The Camera Shop, 113-15 South 52nd St.	Sept. 25 to Oct. 1	Zeiss Ikon Loan Exhibition
Philadelphia	Klein & Goodman, 18 South 10th St.	Sept. 25 to Oct. 1	Zeiss Ikon Loan Exhibition
St. Louis	W. Schiller & Co. 1109 Locust St.	Sept. 18 to 30	Zeiss Ikon Loan Exhibition
San Francisco	Photo Art Print Gallery	Sept. 1 to 14	Dever Timmons and M. U. Wallach One-Man Shows.
Waterbury, Conn.	Wilhelm, Inc. 139 W. Main St.	Sept. 4 to 30	Zeiss Ikon Loan Exhibition

White Background

If there's a detail in the background that you don't want, there is a simple method to paint it out without affecting the negative.

Take a thin piece of ground glass and place your negative, glossy side to smooth side of glass, fastening around the edge with Scotch tape. Now hold the ground glass in front of a light (negative side to the light), and with

the sharp point of a pencil, outline carefully the part of your picture you want to keep, on the ground side of the glass. Then with a soft brush, and using red Opaque, block out on glass, according to your pencilled outline, all of the picture you do not want on your finished product. Let the paint dry, then put the whole thing in your enlarger or contact printer and proceed as usual. The background will be white.—Charles Fitz-Randolph.

This 2 1/4" x 3 1/4" Super MIN LARGER

Complete with 3 1/2" focus f 4.5 Wollensak Velostigmat

Here is a Super Value made possible by quantity production and selling only direct to the user. This model is of almost unlimited capacity. Its lever locking, vibration proof upper assembly is second to none in rigidity. 48" upright gives 13 linear diameters enlargement on worktable; 22 on the floor; 4 1/2" diameter first quality ground and polished condensers give intense, even illumination for any size prints; opal glass may also be used. High-low light control, for matching light to dense or thin negatives: "on" and "off" foot switch, leaves both hands free for "dodging" the print. Micro focusing screw mount, 1/2" up and down movement per turn; dustless metal negative carrier (no glass used or necessary) for cut enlarger. Will perform alongside of any 2 1/4 x 3 1/4 enlarger, irrespective of price. \$37.50 delivered.

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Practical Print Developing

(Continued from page 52)

measure-full or approximately 25 grams per pint). This allows most developers (e.g. Edwal-111, 110, 126) to be used up to 85° F. If the print is to be left in the acid stop bath longer than 10 or 15 seconds Thermo Salt should be used in this bath also. It is not necessary to put Thermo Salt in the fixer, though if a fixing bath is to be used above 75° F. it should always be freshly made.

The Short Stop. It is common practice to rinse prints in an acid stop bath containing 1½ ounces 28% acetic acid per quart of water. If only a few prints are to be made at a time half this amount of acid is sufficient. Citric acid (1 ounce per quart) can be used in place of acetic acid if desired.

Fixing. Prints should be fixed for ten minutes or more and should be agitated occasionally if there are several in the fixing bath at one time. Prints should not remain in the fixer too long, however, especially in warm weather, because partial toning sometimes takes place, giving off-color images.

After handling prints in the fixing bath, the hands should always be washed and wiped dry before handling prints in the developer. If a trace of hypo is carried over to the developer, yellow stains are produced on subsequent prints.

Washing. Prints should be washed in running water for an hour. Every trace of hypo should be washed out if permanence is desired or if the print is to be toned.

Cleanliness. Keep things clean—hands, trays, film, lenses, work-tables. Washing the hands before development prevents finger-stained prints. Wiping off tables, shelves, etc., with a damp cloth removes dust which might get on film or negative-holders. *Dry chemicals should never be mixed or handled in the dark room* because the dust gets in the air and settles on paper and other objects and



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Guaranteed superior for enlarging. Negative graininess dissolved by diffusion obtained. Four smallest bulbs are interchangeable. Rated life, 300-hour minimum. Miniature enlargers give better prints. Write for new folder of Wonderlite Lamps.

Watt	60	75	100	150	500	300	200
Bulb	A21	A21	A21	A21	A35	A30	A23
Price	\$0.35	\$0.40	\$0.50	\$0.60	\$2.00	\$1.50	\$9.95

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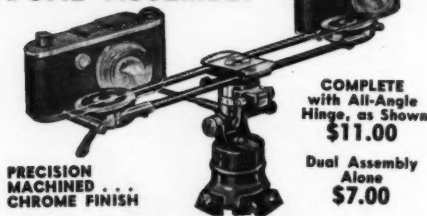
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Will give uniformity of prints, and save your time, paper and money.

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soon there is a green or brown or purple stain where each particle settled.

If developer or hypo is spilled on the work-table or floor it should be mopped up with a wet cloth. If the spilled solution is allowed to dry and is walked on or rubbed with a tray, enough chemical dust is scattered into the air to ruin plenty of film or paper.

Print Developers. Many workers stick to the developer recommended by the manufacturer for the particular brand of paper being used. But developers available in prepared form have certain advantages. The various Edwal paper developers are classified according to the tone they tend to produce. Generally the neutral or "true-black" tones produced by Edwal-102 or Edwal-111 are most pleasing in the general run of pictures. For subjects such as in stage photography, where unnecessary detail is to be suppressed in the darkest portions of the print, Edwal-120 is to be recommended.

Edwal-111—For general print making.

	Metric	U. S. Units
Water	1 liter	32 ounces
Motol (Elon, Pictol)	5 grams	75 grains
Sulphite	80 grams	2-2/3 ounces
Monazol	6 grams	90 grains
C. H. Q.	15 grams	225 grains
Potassium Carbonate	120 grams	4 ounces
Potassium Bromide	3 grams	45 grains

To use: Dilute with seven parts of water for bromide papers, and five parts for fast chlorobromides (e.g. Vitava Projection). For slow chlorobromides (e.g. Opal, Indiatone, etc.) and contact papers, dilute with four parts of water.

For tray development of negatives dilute with 8 parts of water and develop roll films 5 to 7 minutes. For tank development dilute with twenty parts of water and develop 15 to 18 minutes at 65° F.

Edwal-111 produces true black tones, with excellent contrast and detail. It is devised for general amateur use.

The developing time for enlarging papers is 1½ to 3 minutes. The best black tones are obtained with a developing time of 2 minutes or over.

Edwal-102—For delicate gradations.

	Metric	U. S. Units
Water	1 liter	1 quart
Sulphite	80 grams	2-2/3 ounces
Edwal T. S. P.	120 grams	4 ounces
Monazol	25 grams	3/4 grains
Potassium Bromide	3 grams	45 grains

To use: Dilute with 3 parts of water for chloride and chlorobromide papers; with 4 parts of water for bromide papers.

Edwal-102 is slower working than most print developers. The image usually appears in 1 to 1½ minutes and development is complete in 3 to 4 minutes. There is considerable latitude as to developing time, for pleasing tones can be obtained with any development from 2 to 6 minutes, thus allowing greater latitude in exposure time than with most formulas. The longer the developing time, the colder will be the tone.

Edwal-102 works best at 50 to 70° F. but can be used up to 90° F. if necessary. At higher temperatures the maximum developing time (without staining) is decreased from 6 minutes at 65° to 4 minutes at 85°. Edwal Thermo-Salt should be added to the developer when the temperature is 80° or above.

Prints developed in Edwal-102 should be rinsed for at least 2 minutes in a short-stop bath containing 1 ounce of citric acid per gallon of water to remove as much of the T. S. P. as possible before going into the fixing bath.

Edwal-102 keeps well in the stock solution but will oxidize quite readily after it has been diluted. The diluted developer



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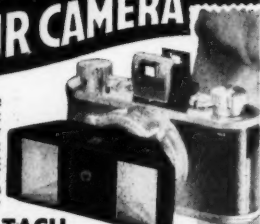
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and give their cameras **TWO EYES**. At the same time, they give themselves new thrills from photography—take pictures that have the depth, perspective, and beauty of **LIFE ITSELF**. Amazing new, low-priced Stereo-Tach (patents pending in U. S. and abroad) fits on your own camera. Light-weight Bakelite, beautifully stream-lined. Pictures taken, developed, and printed or enlarged in the regular way—no complications or extra cost. **BUT WHAT A DIFFERENCE** when you look at them! It's astounding—like looking at the person or scene **itself!** It's the universal comment. **YOU'LL** be just as enthusiastic. See your Photographic Dealer, or write us for Free Details, and a fascinating free booklet on **THREE-DIMENSIONAL PHOTOGRAPHY WITH THE STEREO-TACH**.

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sometimes acquires a very dark color during use but this does not indicate exhaustion, as it will keep on developing prints long after it has acquired the color of motor-oil. The stock solution is very concentrated and will crystallize if stored at low temperatures. This may be remedied, if necessary, by diluting with an equal volume of water.

Edwal-120—For rich dense blacks.

	Metric	U. S. Units
A. Catechol (Edwal)	20 grams	300 grains
Sulphite	40 grams	1-1/3 ounces
Water	1 liter	1 quart
B. Potassium Carb'ate	120 grams	4 ounces
Water	1 liter	1 quart

For tray development of negatives, mix one part of A, two parts of B, and one part of water. Develop 5 to 7 minutes.

For chloride and slow chlorobromide papers, mix one part A and two parts B and add 1/2 ounce 1% Orthazite stock solution per quart of developer. For fast chlorobromides, mix one part A, two parts B, and one part of water and add 1/2 ounce 1% Orthazite per quart. For bromide papers, mix one part A, two parts

ENJOY THE EXCLUSIVE FEATURES OF THE

New BEACONLITE Enlarger

AIR-CONDITIONED ILLUMINATION:

The Red Neck BEACONLITE Enlarging Lamp is in direct contact with circulating air, providing maximum coolness. The BEACONLITE Enlarger has the only perfect air-cooled system.

YOUR CHOICE OF LAMPS:

Uses either BEACONLITE Safety Red Neck Lamp which provides darkroom illumination as well, or standard Mazda Enlarging Bulbs. The BEACONLITE Lamp is available at all dealers.



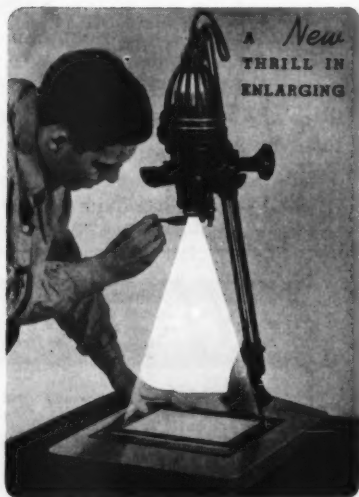
FLEXIBILITY:

The BEACONLITE Enlarger is designed for horizontal and floor projection so that unlimited enlargements may be obtained for mural work. The lamphouse may also be tilted at any angle for correction of perspective.

OTHER FEATURES:

Supplied with fully color corrected four-element Belar F4.5 objectives. Glassless negative carriers available for all standard size films. Sturdy, adjustable friction drive for raising and lowering of lamphouse. Precision focusing. Tilted upright pillar permits maximum enlargements in center of board. Cam lever release controls pressure on negatives. Supplied with ground and polished optical condensing lenses.

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35 mm. to 6x6 cm. 35 mm. to 6x6 cm.
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\$59.50 **\$74.50**
Complete with BELAR F:4.5 lens

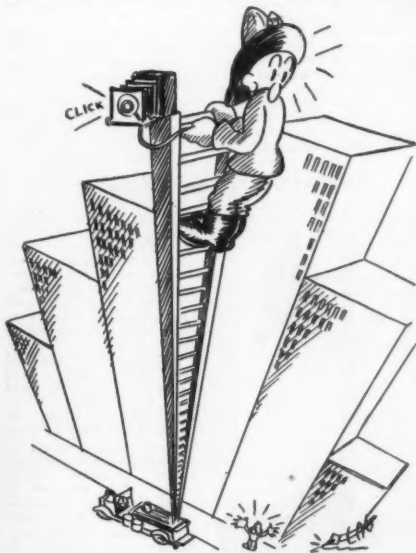
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Edwal-120 produces very rich black tones and is useful for prints where bold masses of tone are desired (i.e. stage shots, etc.) and detail is to be suggested rather than rendered with great exactness. The developer can be made to give finer detail if desired by increasing the amount of Orthazite or by adding a little potassium bromide.

	<i>Metric</i>	<i>U. S. Units</i>
Sulphite	25 grams	375 grains
Amidol	6 grams	90 grains
Potassium Bromide	0.8 grams	12 grains
Water to	1 liter	32 ounces

For development of chloride (contact) papers use full strength and develop about 1 minute. For chlorobromides dilute with an equal volume of water and for bromide papers with 2 parts of water. Develop $1\frac{1}{2}$ to 3 minutes. For softer pictures dilute with more water and for stronger contrast dilute with less water.



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Photography TRADE NEWS

Enlarging Exposure Meter

The Enlargometer (\$4.75), a new instrument for determining exposure and selection of proper printing papers for enlarging only, is announced by the Research Engineering Company, 312 S. Michigan Ave., Chicago.

The Enlargometer is used directly on the enlarger easel and measures the light intensity passing through the negative. To determine exposure for an enlargement, the Enlargometer dial is set for the speed of the paper being used, and the knob is turned until a comparison spot disappears. The proper printing time is then indicated.



The proper grade of paper is determined by taking two readings over the projected area; one over the brightest spot and one over the darkest spot. The Enlargometer dial calculates the contrast index of the paper required.

The Micro-Star is a new type spot in the form of a cross which aids in faster determination of light values. The independently illuminated surfaces of the comparison field make possible accurate determination of the light values for low intensities.

The Enlargometer operates on 105 to 120 volts either AC or DC. (Other voltages are available at a slightly higher price.)

An illustrated booklet, which includes instructions for dodging, local control, montage, tricolor separation, and a comprehensive listing of paper speeds and contrast data, is provided with each instrument.

New See Sharp Feature

The See Sharp focusing device for enlargers is now being furnished with crossed black lines on the ground glass. These lines furnish a standard for sharpness by which the sharpness of the image can be judged.

Also, when an image is thrown in and out of focus, one consciously or unconsciously strains the eye muscles to bring the image into focus. When one looks at these black crossed lines, the muscles of the eye are stationary while the focus is being adjusted.

Used See Sharps will be equipped with this new feature if the See Sharp is mailed with fifty cents in stamps to the manufacturer, R. P. Cargille, 118 Liberty Street, New York City.

Univex Micrographic Enlarger



The new Univex Micrographic enlarger (\$27.50) incorporates a number of new features. An automatic film pressure release permits sliding the film without scratching. The double lens condenser system provides uniform flat field illumination.

The enlarger is supplied with both double and single frame masks, and other masks are available.

The enlarger uses the standard Mercury 35 mm. lens which is focused by a smooth-acting quadruple thread focusing adjustment. This enlarger is supplied with adjustable ruby filter and holder and is of die cast construction. Adapters are available for Leica, Contax, and other makes of lenses.

Solar Enlarger



Incorporated in the SOLAR Enlarger, manufactured by Burke and James, Inc., 223 W. Madison Ave., Chicago, Ill., is a new, interchangeable, dustless metal negative carrier which is available in sizes from 35 mm. to 4"x5". Other features of the enlarger include micro-metric accuracy in focusing, adjustable bellows, and a built-in safety filter.

The enlarger is made in two series, 4"x5" (less lens, \$49.50) and 5"x7" (less lens, \$52.50). These are also made in special wall mounting models (less lens, \$59.50).

Beaconlite Enlargers

The Beaconlite 4x4 cm. and 6x6 cm., new additions to the Optikotechna series of enlargers, are announced by Chess United Co., Emmet Building, New York City.

The following features are incorporated in these instruments:

(1) The lamphouse is fully air-conditioned. The hottest part of the lamp (the neck) is in contact with open air.

(2) The neck of this lamp is red and serves as a darkroom safelight while enlarging.

(3) May be used for horizontal projection in mural work.

(4) Tilts at any angle for correction of distortion.

The upright pillar is tilted at an angle so that images are projected on the center of the board and maximum enlargements may be obtained. The pillar may also be revolved for floor projection. Lenses supplied are the Belar f4.5 objective, corrected for both color and flatness of field. Glassless negative carriers are available for either model in various sizes. (A glass plate carrier in the 6x6 cm. size is also available.) Condensing lenses and a large veneer baseboard are supplied.

The 4x4 cm. model, complete with Belar 2 1/4" lens and choice of one negative carrier, lists at \$55. The 6x6 cm. model lists at \$69.50 complete with double condensers, Belar 3" objective, 2 1/4"x2 1/4" glass negative carrier and set of masks for smaller negatives.



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Putting on a picture show with the S. V. E. Tri-Purpose Projector is as simple as lifting a book from a shelf. For this modern, streamlined equipment provides maximum brilliance, without bulk or excess weight. It is simple to operate—can be readily adjusted to show either film strips or 2" x 2" slides. A patented heat-absorbing filter minimizes heat at the aperture and fully protects treasured film. Several styles from 100 watts to 300 watts. Model AA (shown above) complete with 300 watt lamp, 5" lens, double slide carrier, Sewing Take-Up and Case is only \$57.50. S.V.E. model EK for 2" x 2" slides only, \$27.50. Write for new folder "Show It Tonight" for full details and name of dealer.

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Kodak Retina I, Chrome, F:3.5 lens.....	33.80
Kodak Duo 820, Black, F:3.5 lens.....	27.50
Super Pilett 2 1/4"x2 1/4" Reflex, F:4.5 lens.....	21.98
Super Ikonat A, F:3.5 Tessar.....	47.80
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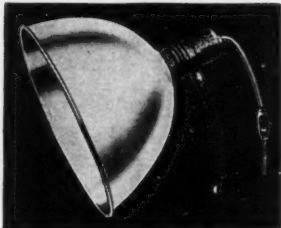
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Mercury Telephoto Lens



A 75 mm., f/3.5 telephoto lens (\$19.95) for the Univex Mercury camera is now being produced by the Universal Camera Corporation, 32 West 23rd St., New York City. This lens is interchangeable with the standard f/3.5 lens used on this camera.

Objects at any distance are brought sharply into focus and a magnification factor of more than 2 to 1 brings distant objects close to the camera.

Kalart Synchronizer for Six-20

The new Eastman Kodak Supermatic Shutter, introduced on the Special Six-20 camera, can be synchronized for speed flash photography with the regular Kalart Micromatic Speed Flash Low Tension model. With this combination, shots can be made at a speed of 1/200 or faster.



The Supermatic Shutter also is to be added to other Eastman cameras. The regular Kalart Micromatic Low Tension model will fit all cameras with the Supermatic Shutter.

Tension model will fit all cameras with the Supermatic Shutter.

Thalhammer Tripod "Points"

Latest improvement on Thalhammer Tripods are the "Sure-Foot" Points. This feature provides studded rubber pads which grip the smoothest indoor surface, no matter how far apart the legs are spread. For outdoor use, double pointed spurs may be flipped into position to firmly take hold at any angle. This arrangement, now incorporated in all models, including the new Thrifty-10, eliminates fumbling and reversing of entire tripod legs as heretofore necessary.

Write the Thalhammer Co., 1015 West 2nd, Los Angeles, Cal., for their 1939 catalog.

Dufaycolor Processing

Dufaycolor Company reports, after a careful analysis of their mail, that over 70% of the color photographers' difficulties have been directly attributable to faulty processing on the part of the individual or dealer who does not have adequate temperature control in the darkroom.

Where temperatures and humidity are high, a strict control is essential for the successful processing of Dufaycolor. If an amateur or dealer does not have the facilities for adequate cooling of solutions, wash-water, and a means of keeping the room temperature down, the processing will be unsatisfactory.

Interest in processing Dufaycolor film on the part of both amateurs and dealers is almost universal. In many instances, however, they neglect to look into the situation carefully and to observe the directions in regard to temperature control that are essential to the successful completion of this procedure. Dufaycolor film is easily processed with the Dufaycolor Dry Developing Kit by anyone who has had experience in darkroom work, but it is essential to maintain 70 degrees or below and accurately cool the solutions. If this cannot be done, the work should not be attempted.

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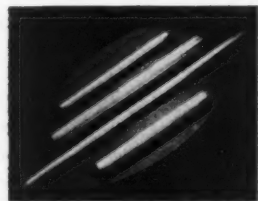
Slide Rule

The Hyde Optical Slide Rule (\$1.50), made of stainless steel, contains fundamental formulae used in figuring anything pertaining to focal length, size of image, aperture, and diaphragm. The Rule gives the depth of focus obtainable with any given focal length and aperture used. It also contains conversion tables which convert from Fahrenheit to centigrade, ounces to cubic centimeters, millimeters to inches, grains to grams, and vice versa.

The Hyde Optical Slide Rule measures 6½ inches long, 1 inch wide and ¼ inch thick. Further details at your dealer, or Henry Herbert, 483-485 Fifth Avenue, New York City.

Tubular Fluorescent Mazda Lamps

A new era in artificial lighting has been initiated with the introduction of fluorescent Mazda lamps, hailed as the greatest single development of light production in many years. The spectral quality



of light from the daylight lamp is the closest approach to natural daylight that it has ever been possible to produce by any artificial illuminant at an efficiency even approaching that of these lamps. Colored light is produced in hitherto unobtainable pastel tints as well as in pure colors.

The tubular lamps contain a small globule of mercury and a small amount of argon gas at low pressure, and preheated coiled tungsten wire electrodes covered with an electron-emissive material. The low-pressure mercury arcs produce ultraviolet radiation which activates the fluorescent chemicals, or phosphors, with which the inside surfaces of the tubes are coated.

The phosphors are energy transformers—they step the invisible ultraviolet radiation down to the visible part of the spectrum. By proper selection and blending of the phosphors, it is possible to produce radiation in practically any desired part or parts of the spectrum. Fluorescent lamps, available only a few months, already have found applications in many different lighting fields and are features of the World's Fair.

New Leaflet Gives Complete "What, How" of G-E Photolamp Line

A new leaflet—intended for all photographers using G-E photo lamps—is available through G-E photolamp dealers and the Lamp Department of General Electric at Nela Park, Cleveland.

Included in the leaflet are: a table giving complete official Weston ratings covering tungsten film speeds for use in determining exposure with G-E photolamps; pictures of the complete line of the 14 light sources available; curves showing time-light characteristics and spectral energy distribution; recommended uses of the various lamps; exposure tables for photoflood lamps covering a complete range of film speeds; a similar table for photoflash lamps including the new focal plane units No. 30, No. 31, and photoflash No. 75; diagrams showing settings for open and synchronized flashes; and, a "recap" table designed for quick and easy reference.

Exhibit of Rollei Pictures

An exhibit of photographs, made by Eugene Lesser, during a recent trip to Mexico, will be held from September 11 to 16 inclusive at the Camera Mart, 70 West 45th Street, New York City.

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Hypo-drain

The Hutchco Adjustable Hypo-Drain (\$1) has been announced. An adjustable feature enables the operator to "balance" the inflow with the outflow, assuring both complete and rapid changes of water. Adjustment is accomplished by a simple twist of the chromium-plated tube in the molded rubber base. A safety drain at the top of this tube prevents clogging of prints at overflow. The device provides ten complete changes of water in a minimum of time. Additional details may be obtained by writing Hutchco Laboratories, 8437 Hollywood Blvd., Hollywood, California.

Britelite Spotlights

Motion Picture Screen & Accessories Co., Inc., 351 West 52nd Street, New York City, has introduced two new spotlights of advanced design to the photographic public. For the first time in photographic history, the amateur, advanced amateur, and professional can purchase a 500 Watt spotlight as powerful as any 2000 Watt conventional spotlight fully corrected for color, and guaranteed. These spotlights come in two models featuring quick focusing, narrow beam, ample ventilation, and no color fringe or chromatic distortion. The Britelite 519 flood spotlight lists at \$19, the Britelite 335 at \$35.

Ronson Photo Contest

Art Metal Works, Inc. makers of Ronson Lighters announce the continuance of their photographic contest for amateurs called, "Library of Laughs". Photographs must show the faces of crowds laughing with "Ronnie"; the robust Laughing Manikin, at the Ronson Exhibit at the New York World's Fair.

Cash awards remain the same: twenty-five dollars for first place, fifteen dollars for second place and ten dollars for third. A number of honorable mentions carrying with them certificates will be awarded to contestants whose entries display merit, but which fail to take a cash award.

The judges of the contest are: Alan Fisher, of the New York World Telegram; Eliot Elisofon, photographer for Life and Fortune magazines, and Eddie Davis, noted radio and screen comedy writer.

Entry blanks may be obtained at the Ronson Exhibit at the World's Fair. Photographs entered in the contest must be delivered or mailed to the Ronson address at the World's Fair grounds, Constitution Hall, adjacent Academy of Sports.

Fun and Profit With Your Camera

Photo-Greet Christmas Cards sell fast. Snapshots of almost any size are quickly and easily attached to smartly designed French-fold style cards in beautiful colors. Favorite subjects, scenes, or portraits add a personal touch to the Christmas greeting and make Photo-Greet Christmas cards distinctively different from the general run of greeting cards. Full details and samples will be sent free. Address your letter to Franklin Greeting Card Co., 1056 East 47th St., Chicago, Ill.

Mogull's World's Fair News

The latest issue of Mogull's World's Fair News lists articles of interest to the expert as well as the beginner in still or motion picture photography. Over 1300 photographic items are listed at discount prices. For a free copy, write to Mogull's, 67 West 48th Street, New York City.

Elkay Cut Film Tank

The new Elkay tank (\$3.50) has an adjustable loading reel to take twelve cut film or film pack negatives in sizes from 35 mm. to 2 1/4 x 3 1/2 inches. Each negative slips into one of the fan-like grooves which spiral out from the center core.

The Roto Reel, which will fit any standard roll film tank, may be purchased separately (\$2). Further details from your dealer. Elkay Photo Products, Inc., 303 Washington St., Newark, N. J.



Foto-Formulary and Darkroom Director

The new FOTO-FORMULARY (\$1) provides fingertip information for the photographer. It includes formulas for all the popular film and paper developers with dilution and developing times, complete data on fixing and washing, intensifiers and reducers. Also included is a table of relative paper speeds, weights and measures, various cleaners, and a conversion table.

Printed in bold type on thick white-coated board, it may be ordered direct from W. C. Brown II, "Brown-croft," Norwich, Connecticut.

New Almanac and Catalogue

Fotoshop is now preparing a giant, 128-page almanac catalog. This publication will contain dozens of almanac features, in addition to 96 pages of camera bargains. Publication day is September 15. Fotoshop will charge 25¢ for this catalog and will credit the purchase price on the first order.

Address all inquiries to Fotoshop, Inc., 18 East 42nd Street, New York City.

Photo Catalog

A new retail photographic catalog has been issued by George Murphy, Inc., 57 East 9th St., New York City. It consists of 272 pages and contains the products of all leading manufacturers, both in America and abroad.

The price per copy is 25 cents, for which a refund slip is included and this amount is deducted from the first purchase of \$1 or more.

New Catalog

The L. A. Camera Exchange, 1037 So. Olive St., Los Angeles, Cal., will issue a new catalog to be a complete photograph supply directory.

Ka-I-Ko Reel-Loader



The Ka-I-Ko Reel-Loader (\$2.50) for loading exposed film for developing, is announced by Ka-I-Ko Products, 39 Bartlett St., Brooklyn, New York.

To use, place your present developing reel into the Reel-Loader, attach the exposed roll onto grips provided for this purpose, and gently pull out the protective paper covering. In these three motions, the film is loaded, ready for developing. It can be used with all spiral adjustable-type developing tanks, including Fink-Roselieve, Albert, Elkay, Fedco, etc.

Salon Exhibition Mounts

Texturite Salon Exhibition Mounts are made of 16-ply standard thickness white pulp board, either white or cream color, and either horizontal or vertical for 8x10 and 11x14 prints. May be had with or without a fine black line around the opening.

Raygram Corp., 425 Fourth Ave., New York City, is the Eastern distributor; Hornstein Photo Sales, 29 East Madison St., Chicago, in the mid-west.

Snapshot Mailer and Mount

The Pict-O-Graph (5 cents each) is a postcard device for mailing small photographs. It opens up into a picture frame and stands on an easel. There is also space for a message to be written on the post card.

Picto-O-Graph is made to hold different size prints, ranging from 35 mm. up to and including the 2 1/2 x 4 1/2 inch size. Thick cardboard is used and the postcard is of regulation size. Made by Benson Camera Co., 166 Bowery, New York City.

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 - Parvula C, F/3.5 Anast. Compur..... 45.00
 - National Graflex II, F/3.5 Tessar..... 50.00
 - Koralle V. P., F/2.9 Radionar Compur F. P. A. Roll film holder case..... 25.00
 - Robot I, F/2.8 Tessar, case..... 70.00
 - Primaflex 4", F/2.9 Pentac, case..... 110.00
 - Leica F, F/2 Summar, case..... 90.00
 - Miniature Speed Graphic, F/3.5 Tessar Kalart R. F. Flashgun..... 120.00
 - Duplex 9x12, F/4.5 Tessar, Kalart R. F. Mendelsohn gun, case..... 75.00
 - Voigtlander Berghel 9x12, F/4.5 Heliar, Kalart R. F. Acc., case..... 65.00
 - Duplex 9x12, F/4.5 Anastigmat Compur..... 35.00
 - Duplex 6x9, F/4.5 Anastigmat Compur..... 30.00
 - Speed Graphic 3 1/2 x 4 1/4, F/4.5 Tessar, Mendelsohn gun, case, F. P. A..... 90.00
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CAMERA SUPPLY STORES AND PHOTO FINISHERS—Write to us on your letterhead for Special Sales Plan and get the details free.

Home Movie Screen

A crystal beaded screen, which is claimed to reflect four times as much light as an ordinary diffusive screen, has been introduced by the Lafayette Camera Corp., 100 Sixth Avenue, New York City.

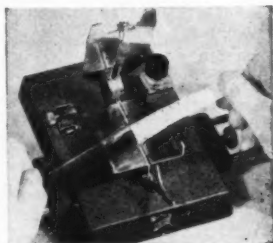
Unrolled from its wooden frame (which also serves as its base), it is 30 inches high by 40 inches wide and is rigidly supported by a metal post. It is free from halation, both in front and from the sides. Weight is approximately 6 pounds.

Diagonal Splice

WITH 16 mm. sound film coming into ever-increasing use, the technique of film-splicing to avoid the "bloop" sound commonly occasioned by square splices, becomes of greater importance.

This "bloop" noise is eliminated when the splice itself is made diagonally, as with a Bell & Howell film splicer. This method gives somewhat the same effect in sound as a very rapid wipe in the picture.

Although created originally for use with silent film, Bell & Howell film splicers also conform to the even greater precision demanded by sound film.



"A to Z" Movie Titling Outfit

A folder of titling tricks is given free with the new 1939 edition of the "A to Z" Movie Titling Outfit (\$2). Full instructions on zoom, revolving, fades, flip-flops, and other unusual effects are now made so easy that the beginner can produce original and professional looking titles. The new folder also contains charts on developing, charts for distances from title boards to lens, screen projection charts, and other valuable information on titling. The outfit is manufactured by Jacob Stein, 175 Fifth Ave., New York City.

Make-up for Better Portraiture

MINER'S, Masters of Make-up since 1864, have created two kits especially for photographic use. The one to be used with ordinary black and white film is, "MINER'S FOTO-MATIC MAKE-UP KIT" which helps produce clear, flattering likenesses and eliminates the necessity of retouching negatives. The other kit "MINER'S FOTO CROME KIT" is for color photography. Tones are especially created to improve color portraits and are synchronized with the colors in any of the standard color films now on the market.

The use of Foto-Matic and Foto Crome make-up is simple and MINER'S tells you how in two interesting booklets: "MAKING UP FOR THE CAMERA SIMPLIFIED" and "SIMPLIFIED MAKE-UP FOR COLOR PHOTOGRAPHY" offered free to all who send a 3c stamp to cover mailing cost to MINER'S, 12 East 12th St., Dept. X-113, New York, N. Y.

Film Preservative

"Cinelaq" film preservative (\$1 for 2 oz.) is now available for the amateur in small quantities. Used previously by Hollywood studios and U. S. Army Signal Corp. It is applied to the emulsion side of the film with a saturated pad of flannel. When dry, the emulsion will not scratch or crack. Treated negatives have no tendency to curl or react to the heat of a projection lamp. Cinelaq is recommended for color film.

Two ounces will treat about 150—4x5 inch negatives; fifty 36 exposure rolls of 35 mm. film, or 1500 feet of 16 mm. film. American Bolex Co., 155 East 44th St., New York City, is distributor.



ROBOT Sequence Flasher

A new sequence flasher for the Robot camera consists of a base containing a flat battery and an automatic mechanism for flashing bulbs in succession by means of the synchronizer of the Robot II camera. An interchangeable bank holds three flash bulbs and reflectors.



The flasher has standard American tripod bushings permitting it to be attached to a tripod or to be connected with the camera by means of a bracket.

A button at the base of the flasher permits instant change of connections to fire three bulbs simultaneously when higher light intensity is required.

Ray-Del Photo Contest

Raygram Corporation reports that results from the RAY-DEL Fine Grain Negative Developer Photo Contest are living up to expectations.

The cash awards as announced by Raygram are:

1st prize\$50
2nd prize\$25
10 prizes\$ 5 each

For complete details and entry blanks, write to Contest Dept., Raygram Corporation, 425 Fourth Ave., New York City.

Home Movie Projector

E. Leitz, Inc., New York City, have announced a new home movie projector, Gnome II. Built of bakelite and metal and equipped with a 100 Watt pre-centered lamp, three lens condenser, heat protection filter, and a revolving front, the projector can be used with Leica lenses or projection lenses of 50 to 100 mm. focal length. The price without the lens is \$45. A convenient carrying case (\$4.50) is made for the projector. For further information request booklet No. 7838 from the manufacturer.

New Federal Enlarger

The new FEDERAL Model No. 230 Enlarger (complete with f6.3 lens, \$34.50; No. 245 with f4.5 lens, \$39.50) has been announced by the Federal Stamping & Engineering Corp. of Brooklyn, New York.

Among its special features are a 4 1/2" condenser lens and opal diffusion plates supplied so that either system may be used, singly or in combination. The lamp housing has double ventilation. The negative carrier is of the book type, can be used with either metal or glass plates and is equipped with a pressure release.

The lens is a highly corrected f6.3 Anastigmat mounted in a barrel type iris diaphragm. The lens mounting is easily removable. The heavy steel upright post is 1 3/4" in diameter by 36" high, permitting linear enlargements from 2 to 8 times on baseboard.



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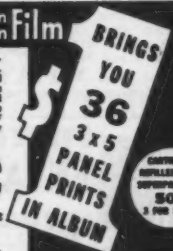
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For years, big Hollywood studios have been using CINELAC in large quantities to protect priceless negatives. Now, for the first time, CINELAC is also available to the amateur. CINELAC preserves your negatives for a lifetime—protects them from scratches, finger marks, brittleness—keeps them pliable—prevents curling due to projection-lamp heat. CINELAC protects all kinds of film—miniature and large negatives, color transparencies, and motion picture film. CINELAC is easy to use. No apparatus is required—simply apply it with a flannel pad. It dries in a few seconds. CINELAC contains no harmful chemical. CINELAC protection costs amazingly little. A 2-oz. bottle—enough to treat over 5,000 sq. in. of film surface—costs only \$1.00.

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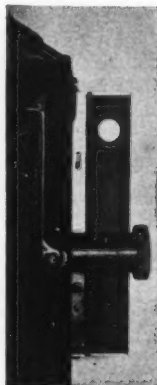
BUILD IT Yourself

Tripod Socket Extension

USERS of a Kalart coupled range finder find that they are unable to use the tripod socket on the side of their camera with the range-finder attached. The tripod socket furnished by the makers of the range-finder for the opposite side of the camera means placing the camera in an inverted position, making it impossible to use the viewfinder. Also, the camera is placed off-center on the tripod.

This can be remedied by a tripod extension. One end is threaded to fit into the camera tripod socket, while the other end is drilled out and threaded for the standard American tripod screw.

The extension illustrated here was made in a machine shop for less than a dollar out of a piece of brass stock. The extension should extend slightly beyond the edge of the range-finder. The diameter of the extension is limited by the distance from the center of the tripod socket to the nearest edge of the range-finder. A milled edge makes removal easier.—Lt. Oscar H. Stroh.



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Darkroom Paper Cabinet



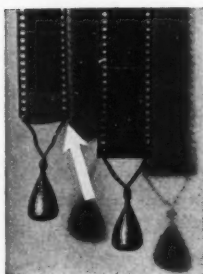
A safe and convenient darkroom container for paper is a bread box with sliding cover. Some boxes have perforations to provide ventilation when used as a bread container. Cover these perforations with gummed paper and paint the box black. Loose paper can then be kept safe from fogging as long as the box is opened only under a safe-light.—Ray Kershner.

Key Ring For Exposure Meter



A small key ring attached to a Weston, or other exposure meter, instead of the cord makes a safe and handy grip while holding the meter. The second finger goes through the key ring.—*Ray Kershner*

Weights For Drying Negatives

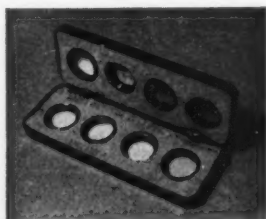


A weight for holding negatives while drying, can be made from a fish line "sinker" and a piece of wire bent to the width of the film. The ends of the wire are bent in the form of a hook, as shown, to fit through the perforations.—*Ray Kershner*

Filter Case

Make a case for slip-over lenses and color filters from an old safety razor case or other metal, leather-covered, spring-hinged box.

Cut a piece of sponge rubber bath mat or kneeling mat to fit snugly within the bottom and the top of the box as shown. Then cut



the holes with a thin pipe or metal can, which is just slightly under the diameter of the lenses or filters. Pound the sharpened edges through the rubber against a smooth wood surface. The aluminum can which 35 mm. film cartridges come in was found to be the right size for the lenses pictured. However, a thin pipe with slightly sharpened edges is better because the edges will not buckle under the hammer blows.

Cement the sponge rubber in place. Cut small circles of paper the size of the holes, print the lens type and "X" power or filter factors on them and glue into the bottom of the holes in the desired order.—*Lecil J. Slaback*

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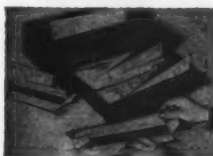
Announcing 5 special "filter-holding"
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CAMERA	PRICE	TYPE	PRICE	Filters to fit: Color densities available:
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Leica 3.5	\$2.00	lined. Screws	\$1.00	Red 1 and 2,
Elmar	\$2.00	securely into	\$1.00	Blue. Filters are
Leica F1.2	\$3.00	threaded lens	\$1.25	solid colored opti-
Summar	\$3.00	mount. Positive	\$1.25	cal glass, ground
Contax F1.2	\$3.00	plane parallel	\$1.50	and polished on
Sonnar	\$3.00	filter align-	\$1.50	both sides.
Rolliflex	\$3.75	ment. Bayonet	\$1.25	

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12 developer . . . All good frames of your 36 exposure
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By VICTOR H. WASSON

THE monthly meter for measuring mighty mentalities. Teasers and testers to twist the camera conscious cranium, revealing your rating as a retainer of photo facts.

Credit your score with **ONE** for each complete and correct question. Questions of more than one part are scored in fractions. 6 is perfect, even at 5 you're a whiz and 4 is passing.

1. We'd rather avoid questions that are open to dispute, but you ought to have **SOME** voice in the proceedings. Anyhow, here's a yes, no, and maybe question.

- A. Suppose you **OVEREXPOSED** a lot of shots on the dock, then took the film, in your camera, to South America, via the Panama Canal, then through the jungle to the Amazon River (some trip, eh?) and back home, developing the roll three months later. Would you have pictures?

<i>Yes</i>	<i>No</i>	<i>Maybe</i>
------------	-----------	--------------
- B. After developing, bleaching, flashing, re-developing and fixing, a batch of cine' film is too light or too dark. Can it be reprocessed?

<i>Yes</i>	<i>No</i>	<i>Maybe</i>
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- C. If you were photographing a piece of glassware, full of distracting reflections, would a polaroid lens kill all the reflections?

<i>Yes</i>	<i>No</i>	<i>Maybe</i>
------------	-----------	--------------
- D. Photographically, is there any difference between Elon, Pictol and Metol?

<i>Yes</i>	<i>No</i>	<i>Maybe</i>
------------	-----------	--------------
2. We'll give you the answers, you tell us why.
 - A. As the diaphragm aperture increases, the f number decreases. *Why?*
 - B. Extremely fast films are more grainy than slow ones. *Why?*
 3. Speaking of grain, we all know that it is caused by developed silver particles in the emulsion. If you devised a process to remove all the silver grains and substitute a dye image, would you eliminate all grain?
 4. How is your familiarity with the tools of the trade holding up?

- A. To get an accurate check on your shutter speeds, you would use a—
Iconoscope
Stroboscope
Microscope
Instoscope
- B. Enlarging times may be readily determined by a—
Hypometer
Galvanometer
Photometer
Hydrometer
- C. If you wanted to develop fast panchromatic film by inspection, you would use a—
Intensifier
Hypersensitizer
Desensitizer
Immunizer
- D. When your rich uncle dies and you trade all your 8 mm. equipment for 16 mm., or vice versa, you will want to have your present films enlarged or reduced to fit the new projector. This will be done on a—
Contact printer
Enlargo printer
Optical printer
Minnie printer
5. Even with high speed lenses and fast films there are some things which can't be done. See if you can spot them.
 - A. Step by step photographs of the development of pan film.

<i>Can</i>	<i>Can't</i>
------------	--------------
 - B. Photograph things you can't see.

<i>Can</i>	<i>Can't</i>
------------	--------------
 - C. Photograph a stage magician's tricks, using conventional stage lighting.

<i>Can</i>	<i>Can't</i>
------------	--------------
 - D. Photograph bullets in flight.

<i>Can</i>	<i>Can't</i>
------------	--------------
6. If someone put a step wedge under your door, you would say—
 - A. "*Shucks! Now I can't open the door.*"
 - B. "*Good, now I can make those color prints.*"
 - C. "*I have a negative test strip.*"

HOW TO SPLICE

**Properly made splices protect film
as well as projection continuity**

By **WILLIAM L. MORGAN**

Illustrated by the Author

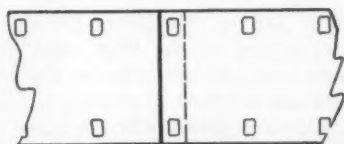
SPLICES carelessly or improperly made are a frequent source of film damage and projection trouble. A little extra time and effort in making clean, strong splices is well spent.

The many different makes of film splicers on the market, in both the 8 and 16 millimeter sizes, can be separated rather generally into two classes: straight and diagonal. In each of these groups can be found the so-called wet and dry splicers.

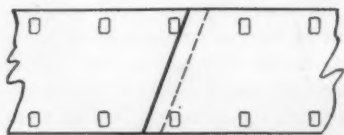
The straight splice, Fig. 1, is a lap at the sprocket holes, parallel to the frame line. The amount of overlapping is about one-eighth of an inch, divided equally between the two frames. Thus, one of the frames will have one-sixteenth inch of the other frame's picture.

The diagonal splice, Fig. 2, makes a lap diagonally across the frame line, below the sprocket hole at one edge of the film, and above it at the other. Advantages claimed for the diagonal splice are: greater strength, since there is more bonding surface than in the straight splice; more pliability; less strain on gate as film passes through it; and, in the case of sound film, comparative noiselessness as it passes the sound drum. On the other hand, the straight splice is less noticeable on the screen. Either of the two types, if well-made, is strong and serviceable.

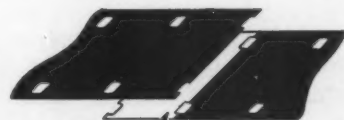
Each make of splicer requires a slightly varied procedure in operation. However, the



STRAIGHT SPLICE (1.)



DIAGONAL SPLICE (2.)



THIS FRAME SCRAPPED CLEAR (3.)



(4.)

following gives the general routine, with cautions to be observed in making a splice.

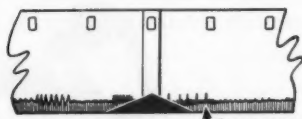
The ends of film to be spliced are placed emulsion (dull) side up, on the sprocket teeth of the splicer. Be sure both scenes are going the same way; that is, that you are splicing the beginning of one scene to the end of the previous one. In film having only one edge perforated (sound film or 8 millimeter), you can't be wrong if the emulsion side is up on both ends of film.

Care should be taken in handling the film, as finger-marks and dirt will injure its surface. Before starting to splice, dust the table and splicer. Also sweep around the table, in case any film should accidentally fall on the floor; clean newspapers spread on the floor would be a definite asset. Handle film by the edges. If you can get used to wearing a pair of cheap cotton gloves when splicing, the added protection given your film is well worth the trouble.

With the film placed on the splicer, cut off the ends square, and scrape away about $\frac{1}{8}$ inch of emulsion from one of the ends. In the wet splicer, the emulsion is moistened first to soften it. Use very little water and let it stand a few moments before starting to scrape. If the film repels water, try a few drops of water on the scraper. Scrape only until the film is clear, being careful not to dig deeply into the film base. Let it dry before applying film cement, or the splice will not hold.

With the dry splicer, no moisture is used, the scraper being such that it removes the emulsion without it. The dry scraper should be used lightly, and only until the emulsion surface is scraped off. If the scraper does not take off the emulsion evenly, it should be adjusted so that it does. Try it out first on some discarded film. In scraping, be careful not to tear sprocket holes.

The scraper, as well as other parts of the splicer, should be kept clean of film particles, cement, and dirt. If it becomes dull, it should be replaced.



"BLOPING" A SOUND SPICE (5.)

In applying the film cement to the scraped surface, care should be taken not to use too much. The beginner is more likely to use too much than too little. As the brush is removed from the bottle of cement, draw it against the inside of the neck of the bottle to remove the surplus; apply it to the film in one stroke, and immediately clamp down the unscraped end of film over it. The film ends should remain clamped together for about half a minute. Then raise up the clamp and with a cloth wipe away excess cement from around the splice. It is not difficult to remove surplus cement from the emulsion side of the film right after making the splice, but if it has run under to the glossy side, it is practically impossible to remove it. These splotches of film cement, besides being unsightly, cause the film to buckle, so every effort should be made to avoid them.

Until you are adept at making splices, test each splice a few minutes after it is made. The splice should be as strong as no splice at all, and if it comes apart readily, it must be remade completely. It is seldom satisfactory to remake the old splice without cutting back to new frames.

The following are reasons why a splice may come apart:

Emulsion not completely scraped. It should be scraped down to clear film base, with no patches showing.

Film scraped too thin. Do not scrape after the film is clear. If scraping tears out the sprocket holes or a corner of film, a new frame must be used.

Emulsion to emulsion. Emulsion side must be up on both ends of film to be spliced, so that the glossy side is spliced to the scraped film.

Scraped portion was damp. Let it dry before applying cement.

Too long a wait after applying ce-

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ment. The ends should be clamped together as soon as possible after the cement is applied.

Not enough, or too much, film cement. There should be just enough to cover the scraped surface. Practice will show you how much to use.

Cement old or adulterated. If cement is thick and gummy, or contains water or little scraps of film, it is useless and should be thrown out.

Clamp removed too soon. Give the cement a chance to set before taking up the splice.

Film dirty. In splicing an old film, clean the glossy side with a little carbon tetrachloride before attempting to splice. Be sure the scraped area is clean of bits of emulsion scrapings before applying the cement.

When the splice is finished, check also to see that sprocket holes are in line, and, in the case of the straight splice, that they will fit over the sprockets. Otherwise, the film may jump and lose a loop in projection.

There is no such thing as a completely invisible splice, since what makes a splice noticeable on the screen is not only the small portion of one scene appearing on another frame, but a little jump as the lapped film hits the film gate. However, particularly in preparing a film for duplication, it is often desirable to make a different kind of splice to avoid cutting into either of the frames which are to be spliced together, thus making it practically invisible in the duplicated film.

There are several ways of accomplishing this. Two are shown in Figs. 3 and 4. Figure 3 is a simple overlap of an entire frame. Cut both ends that are to be spliced together right at the frame line. Leave an extra frame, however, on one of the ends. Scrape this entire frame clean of emulsion by dampening it and scraping with the finger nail or a blunt piece of polished wood, such as the flat end of an orange stick (used for manicuring). Do not use the metal scraper, as it will scratch the surface of the film base. Do

not use a dry scraper, as it is difficult to manage over such a wide area and is likely to give a "frosted" appearance to the clear film base.

Put the scraped end of the film on a regular film splicer, or on a form made by spacing several small brads the distance apart of the sprocket holes. Apply film cement sparingly to the tip of the scraped area, and also adjacent to the next frame. Be careful not to use too much cement as it will cause the splice to buckle.

Another "invisible" splice is shown in Figure 4. Cut each end half-way across the frame line, and then at an angle across an extra frame. Scrape this triangular tab on each end of the film in the same manner as above. Put the two ends together with the tabs underneath, as shown in the diagram. Lift up the corners of the film to apply cement to the tabs, and, as in all splices, hold the ends firmly in contact while allowing the cement to dry. This splice is very satisfactory and practically invisible if it is clean and if not too much

cement is used.

The splicing of sound film presents no problem differing from silent film, except that the splice must be made noiseless. This is done by a process known as "blooming". The "bloom" is either painted on the splice with black india ink or is cut out of opaque cellulose tape (sold at most photographic stores) and stuck on. In either case, it should be approximately the shape shown in Figure 5.

So-called "sound" splicers can be used for both sound and silent film, whereas "silent" splicers can be used only for silent film. It is therefore advisable to get a splicer which is adaptable to either type of film.

Before projecting a borrowed film or a film of unknown condition, it is a good plan to check the condition of its splices. This is done by slowly winding the film on a pair of re-winds, holding the film by both edges between the thumb and index-finger. Any rough places should be examined carefully, and a new splice made if necessary.



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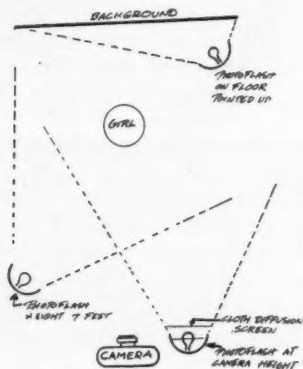
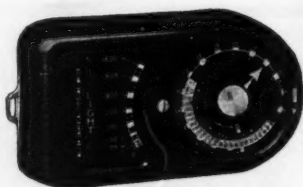


Diagram showing the lighting arrangement used for the September cover shot.

Answers to KAMERA KWIZ

1. A. Maybe. B. Yes. C. Maybe. D. No.
2. A. The f number denotes the **RATIO** between the focal length of the lens and the aperture. Therefore, as the aperture increases, the **RATIO** between them becomes less.
B. The speed of film is controlled largely by the size of the silver particles, big ones being more light sensitive than smaller ones. Most films are mixtures of large and small particles, the faster films having more large ones.
3. No. To be practical the dye would have to remain only in the portions where silver was present and would therefore be as "grainy" as the original silver.
4. A. Stroboscope. B. Photometer. C. Desensitizer. D. Optical printer.
5. A. Can't. What would you use for light?
B. Can. Infra red films record invisible red rays.
C. Can't. His hands are faster than any shutter speed possible under the conditions.
D. Can. Special laboratory flash lighting makes this possible.
6. "Good, now I can make those color prints."



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